THE IRON AGE

A Review of the Hardware, Iron, Machinery ... Metal Trades.

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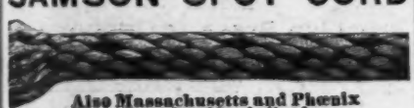

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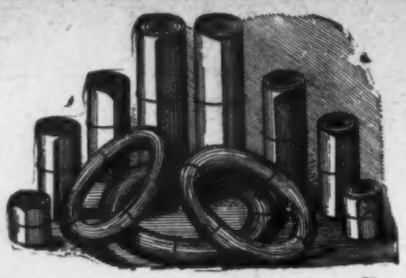

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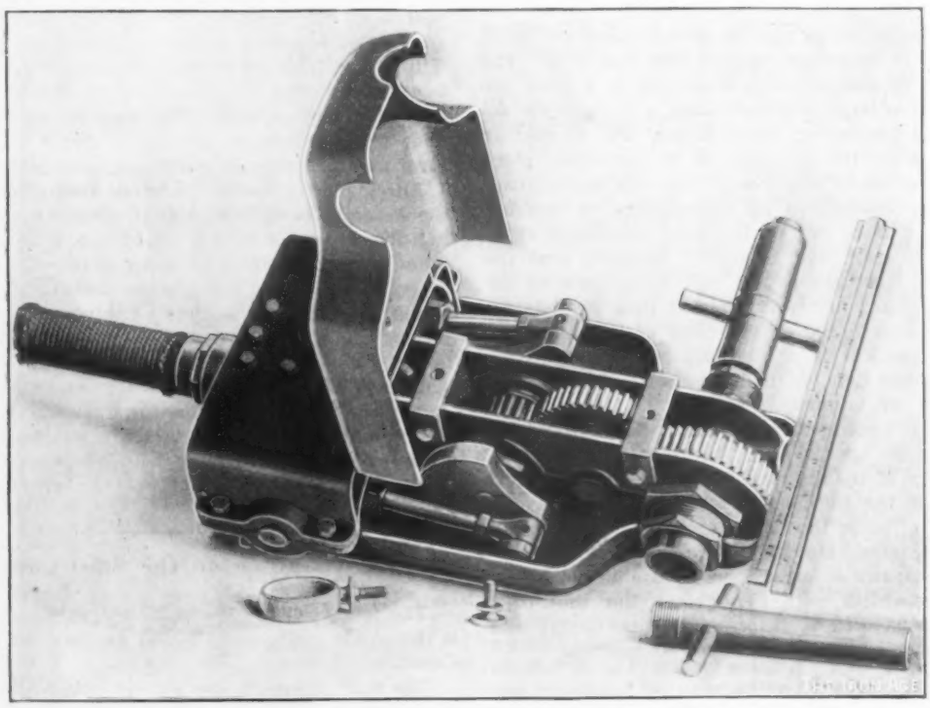
THE IRON AGE

THURSDAY, MARCH 14, 1901.

The Helwig Reversible Pneumatic Motor.

The accompanying engraving illustrates a reversible pneumatic motor arranged to drive a spindle to which may be attached tools of different kinds. The spindle is placed in bearings in the end of the case, so that the tool may be operated in very close quarters. The motor is composed of two oscillating cylinders, which take air at both ends. The trunnions have steel ferrules to protect them from wear. In the main frame are two air chests, one on each side, one for live air and the other for exhaust. By turning the handle half way round the functions of these chests become reversed, thereby reversing the motion of the machine, and readily controlling it. A one-quarter turn of the handle stops the motor. The air is admitted and exhausted through the handle, which is provided with an adjustable collar which can be set so that the motor runs but one way only. The handle is detachable when the machine is suspended, or when it is used for tapping and reaming. A train of gears transmits power from the engine shaft to the spindle. The aluminum casing has a hinged cover, by raising which the working parts can be inspected and oiled. The largest motor of this type at present built by the Helwig Mfg. Company of St. Paul, Minn., weighs 33 pounds, and develops about 2 horse-power, with a consumption of 17 cubic feet of free air per minute at 90 pounds pressure. The maximum speed of the spindle is 200 revolutions per minute under 100 pounds pressure. The speed is controlled by the handle or throttle to meet the demand.



THE HELWIG REVERSIBLE PNEUMATIC MOTOR.

Contracts have been let for a new Sibley College building to house the mechanical department of Cornell University, Ithaca, N. Y. The new building is the gift of Hiram W. Sibley of Rochester, N. Y., after whose father the college is named. The cost will be $75,000, and the structure will be a three-story stone building of fire proof construction, surmounted by a metal dome. The plan of the building will correspond to that of the other buildings of the university. The basement will be fitted up with 600 steel lockers for the use of the students. The first floor will be devoted to museum purposes. The second will serve as the main floor of a large auditorium, with a gallery above. The auditorium will be used for the weekly Sibley College lectures, which are of general interest. The building, it is hoped, may be completed by January 1, 1902.

Chicago's New Bascule Bridge.—The big new bascule eight-track railroad bridge over the drainage canal at Campbell avenue, Chicago, has just been completed, after two years' work, and will shortly be thrown open for regular traffic. It is the largest bascule bridge in the world, being 434 feet long and 75 feet wide. The bridge is located about 2000 feet west of the junction of the main drainage channel with the Chicago River and provides a clear waterway for navigation of 120 feet. Eight railroad tracks cross the canal at this point. Four of these tracks are owned by the Pittsburgh, Cincinnati, Chicago & St. Louis Railway, two by the Chicago Terminal Transfer Company and two by the Chicago Junction Railway. The bridge cost $720,000. A swing in this place would be totally inadequate to fulfill the requirements. Its center piece would take much of the room in the channel, though this would not be the serious obstacle in the wide canal that it is in the narrow river. All the tracks would be concentrated on one narrow structure, and if this were disabled in any way it would be necessary to keep it open to accommodate navigation, while the business of the railroad companies would be tied up.

The Standard Tube Works and the Shelby Steel Tube Works, both of Ellwood City, Pa., are experiencing one of the best and most profitable runs in the history of the mills. Both factories are running double turn, their principal work being on boiler flues.

The National Standardizing Bureau.

WASHINGTON, D. C., March 12, 1901.—The President on the 9th inst. nominated Prof. S. W. Stratton of the University of Chicago to be Director of the new Standardizing Bureau, and the Senate on the same day confirmed the nomination. This appointment was foreshadowed in *The Iron Age* last week and clears the way for the early realization of the plans of the Secretary of the Treasury and the officials of the Coast and Geodetic Survey for the establishment of this important institution. In speaking informally of the steps already projected for the development of the Bureau, Professor Stratton said to the correspondent of *The Iron Age:*

"I see no reason why our laboratory, for which Congress has provided, should not be constructed and at least partially equipped within a year. We hope to be able to find a site within a few days somewhere in the suburbs of the District of Columbia, not too far distant from the center of the city and at the same time removed from the disturbing influences of electric currents, noises, &c. Our appropriation will enable us to procure a site of considerable area and to construct a handsome and commodious building.

Standardizing Pyrometers.

"It is my expectation that the new Bureau will be of great service to manufacturers of iron and steel. The measurement of temperatures especially is a most important factor in large establishments, and upon the accuracy of the pyrometer, for example, will frequently depend the successful execution of an important piece of work, the failure of which would mean a heavy financial loss. The calibration of instruments to measure temperatures will be one of the most important functions of the Bureau, and I think it probable that the services of at least one expert will be exclusively devoted to this class of work. Great progress has recently been made in the development of low and high temperatures, and it is of the utmost importance to every steel maker that his instruments should be as accurate as they can be made.

"In a recent statement to Chairman Southard of the House Committee on Coinage, Weights and Measures, who had charge of the Standardizing Bureau bill, Albert Ladd Colby of the Bethlehem Steel Company gave a graphic illustration of the importance of such a bureau in the United States. He said that many processes pursued by his company required the accurate measurement of high temperatures with pyrometers, but that they were unable to have them calibrated in this country and were obliged to send them abroad for comparison.

Steam Indicators.

"It will be a part of the work of the Bureau to standardize steam engine indicators used in the making of diagrams. The accuracy of these devices depends on the resistance of the springs with which they are constructed, and in order that results may be uniform and capable of comparison with each other these indicators should be carefully adjusted to fundamental standards in the custody of the Bureau.

Steam Gauges.

"The standardizing of gauges for the measurement of hydraulic and steam pressures would also come within the functions of the Bureau and would be an important part of our work The accurate adjustment of such gauges is highly important, and at the present time it is impossible in this country to have one of these devices compared with an official standard. The makers produce very good results, but they are at a disadvantage with German manufacturers, for example, who can have their products officially standardized by the Reichsanstalt

"In this connection it should be said that it would not be necessary for manufacturers of instruments, or for those using them, to send all of them to the Standardizing Bureau for calibration. It is assumed that a few of each class manufactured with unusual care would be sent to the Bureau for accurate adjustment, and would then be employed as secondary working standards for the calibration of the current output. These secondary standards could be returned to the Bureau from time to time for readjustment, and thus the highest possible accuracy could be secured.

Calibrating Dimension Gauges.

"It would not be a function of this Bureau to attempt to determine the proper gauges for wire, metal plates, pitch of screws, &c., as these are matters to be decided by the manufacturers themsives, but the scale of gauges having been fixed it would be a very proper function of the Bureau to compare and calibrate the instruments used in measuring wire, plates, and in fixing the pitch of screws, &c. Generally speaking, the Bureau will not undertake to establish arbitrary standards or units, but would content itself with calibrating the instruments used in making comparisons with such standards or units. A useful function of the Bureau would probably develop in the settlement of disputes between manufacturers, consumers and others concerning the accuracy of apparatus, instruments, gauges, measurements, &c., and the effect of the existence of the Bureau would have a tendency to induce greater care on the part of all persons employing instruments of precision.

"I should like to emphasize the fact that the Bureau will in no way compete with private enterprise. It will simply be a public institution, the facilities of which will be available by private individuals who may desire to use them under the prescribed regulations. No favoritism will be shown, and the schedule of fees for work done will be so reasonable as to give a large manufacturer no advantage over his small competitor."

Director Stratton has received from the secretary of the Association of Steel Manufacturers a resolution giving the hearty indorsement of the association to the Standardizing Bureau. The secretary says: "The sole object in view when forming this association in 1895 was to discuss technical matters pertaining to the manufacture or use of steel. We have already been instrumental in the standardization of structural shapes, in the standardization of specifications for iron and steel, as well as many other matters pertaining thereto. The members are therefore in a position to appreciate the practical advantages of standards and their indorsement of the National Standardizing Bureau should therefore carry considerable weight." W. L. C

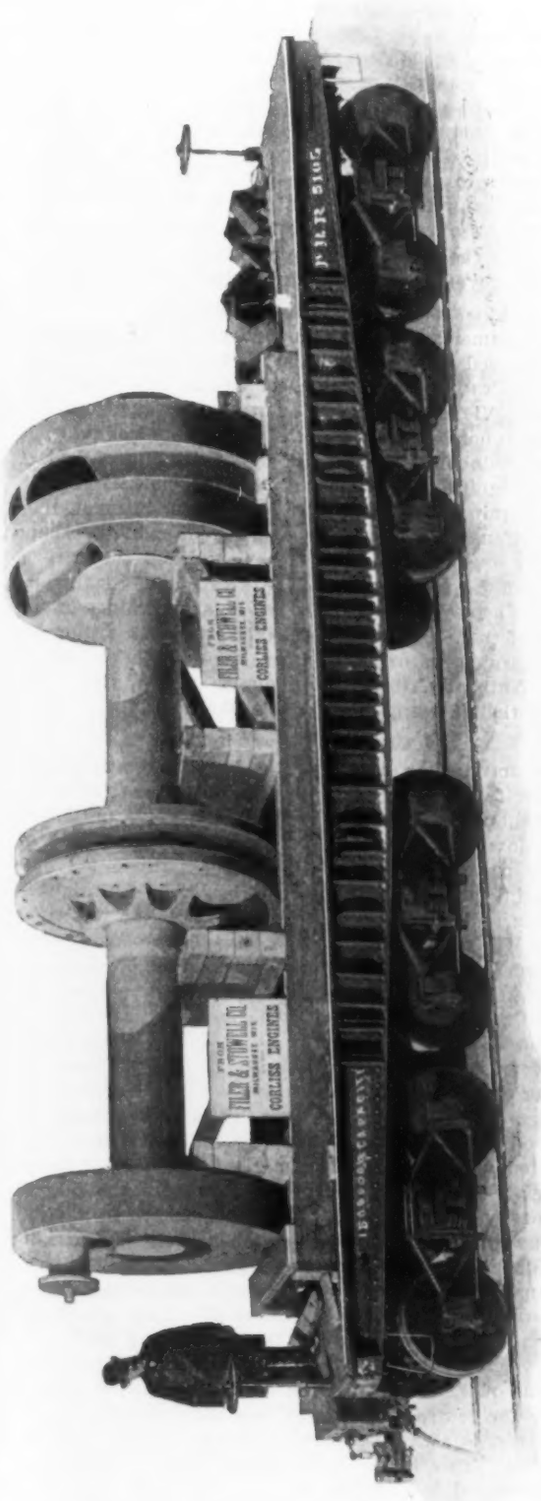
An Englishman on the Steel Corporation.

The *Iron and Coal Trades Review*, of which J. S. Jeans is the editor, concludes a leader on the "American Steel Combine" with the following:

The total quantity of pig iron produced in the United Kingdom in 1899 was over 9,300,000 tons, and the total quantity exported as pig iron, and as finished iron and steel, allowing 10 per cent. for waste and loss in commisson, would probably be about 4,100,000 tons, leaving 5,200,000 tons, as pig, to be consumed in the United Kingdom. To this is to be added the imports of iron and steel into the United Kingdom, which for 1899 were about 500,000 tons more, again as pig, making a total home consumption of 5,700,000 tons in terms of that commodity. It is obvious that if the Government of the day were to consent to the imposition of import duties on the same scale as those levied in the United States, the manufacturers of the latter country could not materially affect, and would not in any way be able to control, this major quantity—at least not directly. It could only be affected by competition in those branches of manufacture into which our home consumption of iron and steel enters, such as ships, armor, boilers, engines and machinery of all kinds.

If, therefore, the American plan of campaign were likely to drive us into a tight place, we should unquestionably be justified in looking to the Government to do something to protect our great industry from threatened ruin. But many things are likely to happen before then. We may even adopt the American system at home, and "better the instruction." If consolidation is to be the final solvent and determinant of cheap pro-

duction, and the retention of foreign markets, the system need not be limited to American experience. There were strong men before Agamemnon, and Andrew Carnegie has no monopoly of astuteness and business capacity. But we prefer to believe that the latest American scheme is entirely too vast, too cumbersome, too unnatural and too subversive of public and vested interests generally, to hold together for any length of time.



TRANSPORTING A SHAFT WEIGHING 139,000 POUNDS.

J. Irving Scott of the Union Iron Works, San Francisco, recently stated to a Chicago reporter that the development of the oil fields of California had solved the fuel problem in his city. Crude oil is being used for fuel in many manufacturing establishments. It has made coal worth about $3 a ton, as against $6 before.

Pacific Coast News.

SAN FRANCISCO, CAL., March 4, 1901.—The establishment of the United States Steel Corporation brings to the front the question as to whether the present condition of things does not afford an opportunity for the establishment of a great steel and iron plant on this coast. The ores of the State are unexcelled as to quality and as to quantity. The great obstacles in the way have always been the lack of proper fuel and of facilities for transportation. The fuel difficulty seems to be the worst. As far as yet discovered this State contains none proper for smelting ore, and I understand on good authority that California petroleum cannot be utilized in this connection, although it is coming into rapid use in a great variety of industries. Our manufacturers up to the present have used it only to a limited extent, because they did not know whether the supply would hold out, and the change from coal to oil of course costs money. The production has increased at a great rate and promises to reach a figure of 10,000,000 barrels this year. Up to the present $44,000,000 of Eastern and foreign capital has been invested. There are already 3489 companies in the field, while the number is being added to daily. Many new millionaires have been created since the excitement began. Of course it is whispered that all the companies are not what they ought to be. But California oil is one of the great factors of the day and will cut quite a figure in the industrial future of the State. It has imparted an unwonted activity to every interest in the State.

The clearing house exchanges since the beginning of February have exceeded those of last year by 16 per cent. Those of the week ending last Saturday were $24,126,-264, against $20,874,537 for the corresponding week last year. This is generally attributed to the influence of petroleum, although I have no doubt that a large portion of the increase is due to generally improved trade conditions. These improved conditions are especially noteworthy in the hardware and metal trades, where general activity is the order of the day.

Every day more and more attention is being paid to the matter of transportation, for our merchants realize that San Francisco's commercial life depends on its proper solution. The principal matter of interest in this connection now is a direct line to Manila. We are nearer to the Philippine capital than any other of the great seaports on the Pacific coast of the United States, San Diego alone excepted, and yet we are being left behind them in the race. The first direct vessel for a long time cleared the other day, a small ex-missionary craft with a small cargo of 2250 barrels of flour. The value of the cargo was as nearly as possible equal to the sum paid for the vessel not very long ago. Since then she has about earned her cost. This is interesting as showing the condition of the freight market in San Francisco at present. All the commercial organizations of the city are interested in this movement to establish a direct steamship line to Manila. J. O. L.

Transporting a Shaft Weighing 139,000 Pounds.

The Filer & Stowell Company of Milwaukee, Wis., recently shipped an enormous crank shaft to the National Steel Company of Youngstown, Ohio. This is said to be the largest single car shipment of machinery that ever left Milwaukee. The shaft is in one piece—that is, the crank shaft with its three cranks and the hub of the fly wheel. The total weight is 139,000 pounds. The shaft is 22 feet long, 26 inches in diameter. The cranks or disks shown are about 8 feet diameter, 16 inches face. These cranks are made from steel and were pressed on the shaft with an 800-ton press.

The ordinary freight car has a capacity of only 22,000 to 80,000 pounds. The car shown in the illustration is a steel car, and the only one in the United States which is capable of carrying this shipment. The car was borrowed from the Pennsylvania Railroad Company. The engine of which this shaft forms a part weighs complete 900,000 pounds. The fly wheel weighs 120,000 pounds. The cylinders of the engine, which is a cross compound, are 40 x 60 inches and 76 x 60 inches, and are capable of developing 5000 horse-power.

Notes from Great Britain.

The Two Chief Topics.

LONDON, March 2, 1901.—Two topics of conversation are uppermost—the American steel combine and the prospects of Mond gas. So far, the combine is an enigma; English steel makers do not know how to take it. Underneath every criticism is betrayed a sense of impotence, as who would say: "The combine in its wisdom may probably do this or that; it can do anything it wants, and we can't stop it." The hope is expressed that the undertaking is overcapitalized, in which case prices will probably be maintained and a cutthroat competition avoided. But uncertainty is the prevailing note. For example, Sir Alexander Wilson, the managing director of Charles Cammel & Co. of Sheffield, on being interrogated, said: "We scarcely know what to think about the new corporation. I have seen the announcement, but I am not prepared to say whether British trade will be damaged. The combine may have that effect. On the other hand, it may keep up trade. It is early yet to express an opinion. I do not wish to express a pessimistic view too early."

C. W. Kayser of Kayser, Ellison & Co., Limited, is emphatically of opinion that the new corporation will do the heavy steel trade of Great Britain great damage. C. W. Kayser argues from the empirical to the rational—a very dangerous intellectual process. He says: "British manufacturers are barred by American tariffs and yet we may see the American steel manufacturer, after supplying the demand at home, selling at lower prices abroad and cutting us out completely in foreign competition. I can give you the name of a German firm who, owing to the duty on imported manufactures, are able to sell at a higher price at home than they demand abroad."

Surely a double edged argument.

One more reported interview may be briefly cited. The managing director and secretary of John Bedford & Sons, Limited, said, *inter alia:* "We can buy American steel, delivered in this town, cheaper than we can buy Sheffield steel. That has been so for two or three years and it is worse just now. . . . We can't understand a combination being made except for purpose of getting an advantage. At the present time there is no sort of competition between English and American steel. The Yankees already are pounds per ton below the English makers. The only thing they can hope for by combining is to get a better price. . . . You don't expect English makers to come to the same level, because their stuff is better; but they have to come in pro rata, and until they do so are bound to suffer. . . . This combination may have the effect of hastening us back to the state of things during the period prior to last year. That period was as satisfactory as any this country has passed through."

I might quote many more British steel manufacturers, but the foregoing indicate, I think, the views of the most representative. It is, however, worth noting that all the Sheffield crucible steel manufacturers are by no means complacent. The operations of the Crucible Steel Company of America are watched with real concern. The net result is that British manufacturers are faced not only with a commercial crisis, but with an intellectual revolution.

Gaseous Fuel.

The second topic, especially among Midland manufacturers, is the probable future of Mond gas. There cannot be the slightest doubt that many manufacturers are expecting great things. It is being subjected to considerable criticism, both technical and scientific. Thus, Professor Lodge, principal of the New Birmingham University, says of it: "The supply of gaseous fuel could be conducted over very considerable distances. They knew how towns went a great distance for their water supply, and there was no reason why they should not go a considerable distance for gaseous fuel supply. The supply of fuel for furnaces and large manufacturing operations and the supply of fuel for household purposes were questions that must be considered by themselves, but it really looked as if gaseous fuel was going to do for both. . . . He could not help thinking that the real solution of the fuel problem would be the manufacture of gas at the pit's mouth, if not at the bottom of the pits, and then carry, not the coal, but the gas it produced, into the towns. If they calculated the size of the pipe required to supply a town they would certainly find it pretty big, but they must remember the immense rate at which gas could rush through pipes. Water could not be driven at a prodigious pace, but with a moderate pressure gas would rush along pipes like a hurricane, and a sufficient quantity provided for all purposes."

It may be assumed that the scheme will soon be in practical operation. I may add that while Professor Mond arbitrarily fixes the price at 8 cents per 1000 feet, he expects to produce his gas at a much lower figure. Midland manufacturers affirm that, if the Mond realizes only half its expectations, they will regain their ascendency over their American competitors. But what is there to prevent American manufacturers following suit?

The Vickers-Cramp Combine.

The numerous journalistic *ballons d'essai* respecting the proposed combine between Vickers, Sons & Maxim and the Cramp and Midvale companies have now been pricked. Vickers, Sons & Maxim have given it out that they have not been satisfied with the amount of information placed before them. Before concluding a deal of such magnitude they required independent reports. Their requirements in this direction not being met, they broke off negotiations. The usual *sequelæ* in the shape of stock exchange quotations have marked the various stages of the negotiations. The prospect of amalgamation had a marked effect upon the market values of the shares of the English firm, and there was speculation for the improvement expected upon the completion of the deal. Naturally, those who bought for a rise have burned their fingers. They don't like it.

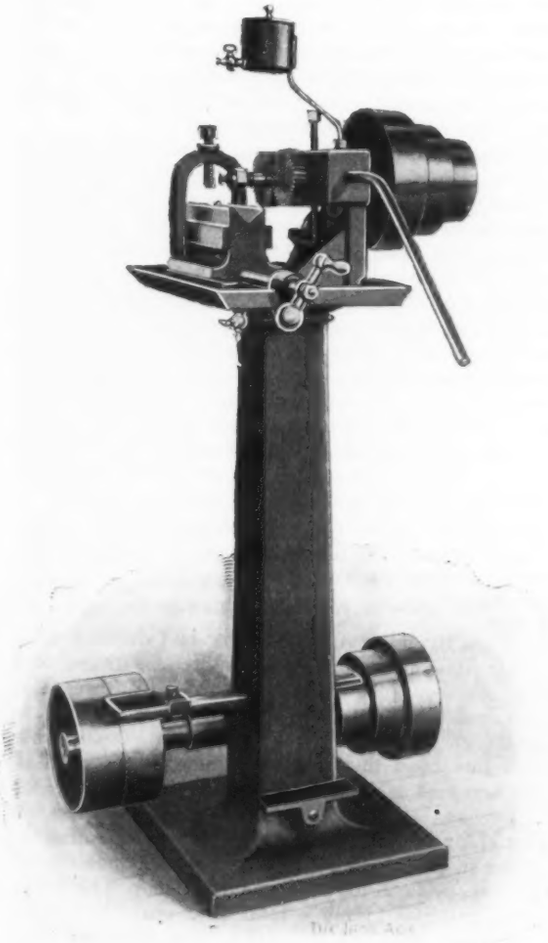
The Metal Markets.

The market has, on the whole, been quiescent during the past few weeks. A feeling is abroad that no more important reductions in price will take place until coal comes down considerably. The small reductions in coal already reported have, of course, been discounted and a material fall in price is deemed absolutely essential before iron and steel prices decline further. At the same time the Scottish steel masters have been considerably harassed by a quite unexpected reduction of $2.50 on steel plates by the Cleveland manufacturers. Speaking generally, it remains true that consumers are buying from hand to mouth, as they are convinced that there must very soon be a slump in coal. In the Midlands the blowing out of so many furnaces has limited production considerably, and, in consequence, it is now difficult to buy good gray forge iron, especially Staffordshire, which is quoted at $12.50. In the marked bar section trade is severely limited by price. Common bars are selling more easily at $30 to $33. Black sheets are in a very bad way and the cost of production has not declined in the same ratio as the market price. The well-known German firm of S. Elkan & Co. are in the market for a considerable quantity of pig iron at $9. They are waiting for prices to come down to that depressing level. So far they have not succeeded in buying. A shipment of 2000 tons of American pig iron having reached Glasgow too late for contracted delivery has been stored in Connal's yards, to await recovery in prices. It is a perilous adventure. This is the first consignment of American pig iron stored in Connal's and has naturally attracted considerable interest. Stocks are very low—64,754 tons, compared with 213,217 tons this time last year. Otherwise prices remain as previously quoted. One feature that deserves close watching is the power of the associations. On a rising market they are all-powerful; it remains to be seen if they can escape disruption when prices are clattering down. The malleable iron founders of Scotland have recently been trying to galvanize their association into life and have now imposed upon themselves a severe penalty for breaking away. Personally, I doubt if it will last for very long. Hitherto, in the face of a trade slump, it has been a case of *sauve qui peut.*

S. G. H.

The Fish Keyway Milling Machine.

The H. C. Fish Machine Works of Worcester, Mass., have designed a milling machine for cutting the slots in shafts for Woodruff keys. The machine weighs about 250 pounds, and has the countershaft built into the post on which it stands. It is also built on a plain post with overhead countershaft. The drive is by 2-inch belt, which, with a countershaft speed of 100 gives cutter speeds of 160, 100, and 62, which are suitable for cutters from ⅝ to 1½ inches diameter. A hand feed of 6 inches is provided and an adjustable stop for depth of cut, to use where long shallow slots are wanted. The clamping yoke to hold the work is adjustable to any point along the V block in which the work is laid. This block is separate from the slide on which it rests and another of



THE FISH KEYWAY MILLING MACHINE

smaller size is provided for smaller shafts, the one shown in the engraving being suitable for shafts up to 2½ inches in diameter. The cutter is sunk into the shaft by the hand lever shown in front. The action is perfectly sensitive, the operator being able to gauge the pressure on the cutter to suit the action of the cutter.

Shaw & Camp, Atlanta, Ga., dealers in engines, saw mills, grain separators and shingle mills, who commenced business in January, 1900, report that their total of business for first year was exceedingly satisfactory. They represent the Geiser manufactory of Waynesboro, Pa., in the State of Georgia and a portion of Alabama, and are also agents for the sale of shingle machines made by the Chase Turbine Mfg. Company, Orange, Mass.

The entire holdings of John Walker and of the estate of H. M. Curry, deceased, in the Carnegie Steel Company have been sold at a price approximating, it is said, $1200 a share cash.

New American Steel Shipbuilding Plants.

BY WALDON FAWCETT.

In no interval of two or three years prior to the opening of 1900 have steel shipbuilding plants been projected or placed in operation in the United States which represented anything like the aggregate investment necessitated for the establishment of the new yards which have been planned or come into being during the closing year of the century. Something of the significance of this sudden development of American facilities for the construction of metal vessels is conveyed by the fact that at least three of the new plants will, when completed, be entitled from every consideration to take rank with the three shipyards which have heretofore stood pre-eminent as the chief exponents of the industry on this side of the Atlantic.

At a rough approximation it is estimated that the new plants projected and the improvements proposed for yards already established will foot up to about $20,000,000. The enlargement of so many of the shipyards already in operation affords, by the way, one of the healthiest signs to be found in a diagnosis of the steel shipbuilding situation. Several plants, including establishments on both the Atlantic and Pacific coasts, which have heretofore confined themselves almost exclusively to the construction of merchantmen of moderate size, steam yachts and torpedo boats, are now adding to their equipment with the intention of undertaking the construction of armored vessels of the largest and heaviest class. Finally, there is no reason to believe that this sudden exceptional activity has been induced in any degree by the hope of the creation of new conditions by the passage by Congress of a ship subsidy measure. The fact that the new plants have been enabled to obtain contracts for mercantile and naval tonnage at satisfactory prices just as rapidly as they were in a position to accept them would seem to offer conclusive evidence that the development is wholly justified by circumstances.

The New York Ship Building Company.

Among the new shipyards first place should perhaps be accorded to the plant of the New York Ship Building Company, at Camden, N. J. This institution, although work had been commenced prior to January, 1900, practically constitutes a creation of the past calendar year. The officers of the company, President Henry G. Morse, well known in bridge building circles; Treasurer W. G. Randle, formerly of the American Line, and Superintendent R. L. Newman, late of the Globe Ship Building Company, Cleveland, have allowed but a limited portion of their plans to become public, but they have constructed on the Delaware River what is unquestionably the most unique plant of its kind in the country, if not in the world. The site of the New York Company's yard embraces a tract of about 130 acres with a water frontage of 3600 feet. The buildings, each of which is of exceptional size for the purpose designed, afford an aggregate of nearly 22 acres of floor space.

The New York Company, when their plant is in full operation, will give employment to over 5000 men, and it is claimed will have, if taxed to the utmost, a productive capacity in excess of any other in America. An especially interesting feature is found in the large machine shop, which is a marvel of equipment, a small fortune having been invested in machine tools. Electricity is used exclusively as a medium for power transmission. Independent motors are scattered thickly throughout the building and derive their current from two 500-kw. monocycle generators, direct connected with two 750 horse-power Rice & Sargent engines, capable of attaining 120 revolutions per minute. This installation also supplies an exceptionally complete electric lighting system, which extends to all parts of the grounds.

The feature of the Camden yard likely to most forcefully impress shipbuilders is found in the per-

fection of a plan for the construction of all vessels of whatsoever size absolutely under cover. As at present constructed the shelters could accommodate a vessel the size of the "Oceanic," and an enlargement to provide for the housing of a hull of even greater dimensions could be made without entailing any inconvenience. To carry out the object outlined there has been constructed a glass covered dry dock and shipbuilding shop which rises to a hight of about 150 feet and occupies a water frontage of about 400 feet on the Delaware. Connected with this are several completely inclosed shops, so that there need be no interruption of work by inclement weather. The glass and steel construction extends for several hundred feet out over the water and will thus permit simultaneous work on three or four of the largest naval vessels. This novel ship shed is fully equipped with the most modern type of cranes and hoisting apparatus, but, as in other parts of the plant, electrical power is in universal use, steam being utilized only to drive the dynamos. The New York Company gave especial care to the dredging operations and dock building at their plant, and a depth of 30 feet of water at low tide is assured on either side of the fitting out slips. The original estimate of the investment to be made at Camden was $6,000,000, and it is quite possible that even this figure will be exceeded. The New York Company have already undertaken contracts amounting to several million dollars. Negotiations have been under way for some time looking to the placing with this firm of a commission for four large passenger and freight steamers for the Atlantic Transport Company, and contracts have been closed for the construction of two large steamers, each of 371 feet length, for the American-Hawaiian Steamship Company of New York; a cargo carrier, 487 feet long, for the same company, and a small steamer for the M. S. Dollar Steamship Company of San Francisco, Cal.

The Eastern Ship Building Company.

Ranking next to the New York Company's undertaking in point of interest in iron and steel circles is the new yard of the Eastern Ship Building Company at New London, Conn. In this case a considerable degree of attention was attracted by the fact that the Great Northern Steamship Company, of which J. J. Hill, the railway magnate, is president, placed with the new company a contract for the two largest cargo carriers in the world, before work upon the plant on the Connecticut coast had been more than planned. The site of the yard is a tract of land on the Groton shore, opposite New London, which was formerly the property of the New York, New Haven & Hartford Railroad Company. It comprises about 30 acres of land and has a water frontage of fully 1500 feet. The president of the Eastern Ship Building Company is Charles R. Hanscom, who was for many years superintendent of the Bath Iron Works, Bath, Maine, and the secretary-treasurer is John Sherman Hoyt, a director of the Jackson & Woodin Mfg. Company.

The Eastern Company will, at least for the time being, concern themselves only with the construction of hulls, subletting the contracts for the machinery of their initial vessels in order that their completion may not be delayed, and erecting machinery and boiler shops as soon as opportunity may offer. The buildings thus far completed include a plate shop 80 feet in width and a brick building 70 feet in width by 250 feet in length, containing the mold loft and joiner shop. A bending floor, comprising 4000 square feet of space, is provided, and the office building, which affords over 6000 square feet of floor space, gives opportunity for a well arranged drafting room. Pneumatic tools are to be used extensively in hull construction and an Ingersoll-Sergeant air compressor has been installed. The tools comprising the shop equipment are all operated by steam. Several locomotive cranes are provided for handling material. The large ships, for which, as previously mentioned, the Eastern Company have the contract, will each be of 630 feet length, 75 feet beam and 55 feet depth. Each ship will be of 20,000 gross tons burden and 33,000 tons displacement. The engines are being manufactured by the Midvale Steel Company of Philadelphia, and steam will be generated in 16 Niclausse boilers. The vessels will cost upward of $2,500,000 each.

The Risdon Iron Works.

Although the enterprise is as yet largely in prospect, it is fitting that an important place among the plants inaugurated with the new century should be accorded to the yard of the Risdon Iron Works, San Francisco. This firm, although engaged in kindred lines of activity for some years past, have only just determined to take up shipbuilding operations on the larger scale outlined. The site being utilized comprises 35 acres of land with a water frontage of some 2000 feet which it is planned to increase by the construction of wharves. Extensive orders for machine tools have already been placed and the company have sent representatives to all the shipyards on the Atlantic seaboard to study approved methods of shipyard practice. Heretofore the Risdon corporation have undertaken only vessels of very moderate size, but they will be in a position within a few months to contract for mercantile and naval tonnage without restriction as to dimensions.

The recent award by the United States Navy Department of contracts for additional naval tonnage in accord with the present Governmental building programme has proven a stimulating influence in the case of at least two steel shipbuilding institutions. By this distribution of contracts the Moran Brothers Company of Seattle, Wash., and the Fore River Engine Company, Quincy Point, Mass., each secured battle ship commissions, and the effect has been to lift them from the class of minor shipbuilders and place them, probably permanently, among the more prominent constructors of metal tonnage. In order to satisfy itself the United States Navy Department sent officers to both plants who, after making a thorough inspection, reported that the corporations were financially able and willing to install the additional machinery necessary for battle ship building, and would be enabled to complete the vessels within the contract time.

The Fore River Engine Company.

The Fore River Engine Company had decided upon more extensive operations even before assurance was given of the securance of the large naval contract, and had removed their plant from Weymouth, Mass. to Quincy Point, at which latter place a practically new shipyard has been installed. The new site comprises over 70 acres of land having fully one mile of water front. Perhaps the best idea of the completeness of this new shipyard may be conveyed by a brief enumeration of the shops, which are of the following dimensions: Ship tool shop, 72 x 400 feet; machine shop, 120 x 250 feet, with galleries giving a total floor space in excess of 35,000 square feet; wood working shop, 72 x 304 feet; storehouse, 72 x 165 feet, and power house, 65 x 105 feet. The machinery equipment is proportionately complete and includes a 25-ton overhead electric crane, 114-foot lathe, &c. Electric power is used extensively; pneumatic tools are employed for hull work and the Sturtevant system is provided for heating and ventilation.

The Moran Brothers Company at Seattle, Wash., took up steel shipbuilding work for the first time only two or three years ago; indeed, the construction of the torpedo boat "Rowan" was their first important contract in this line, but they will have ere the summer of 1901 has lapsed a plant that will enable them to undertake practically any class of ship work. This company have now on the stocks a steel twin screw steamer for use in the lighthouse service on the Pacific Coast.

The William R. Trigg Company.

The William R. Trigg Company had a steel shipbuilding plant fully installed at Richmond, Va., prior to the opening of the year 1900, but at the same time their establishment is entitled by every consideration to rank with the new steel shipbuilding institutions of the country, and never has the United States, much less the New South, afforded a more striking example of what energy may accomplish in the line of rapidity of

development. The Trigg Company secured contracts from the United States Government for torpedo craft before their plant was under way, but notwithstanding a disastrous flood, that did much damage, the company had their new yard in full operation within five or six months of the time negotiations were opened for the site. The securance within the past year of additional naval contracts has served as a stimulus to an even more rapid enlargement of the plant than had originally been contemplated. The ambition of the officers to install a plant that will cost fully $1,000,000 has been furthered materially by the recent action of H. M. Flagler of the Standard Oil Company in subscribing to $100,000 worth of the stock of the shipbuilding corporation.

By recent arrangement with the city of Richmond and the United States Government, the Trigg Company have provided for the construction of a rock wall on the Port Warden's line in the James River. This not only insures a depth of 25 feet of water at all times, thus permitting the construction of the heaviest class of craft, but enables the reclaiming of fully 20 acres of land which, when added to the original site, brings the total area occupied by the Trigg plant up to nearly 30 acres. Another improvement undertaken within the past few months is the construction of a gravity dock 600 feet in length. The Trigg Company have during the past year made heavy investment in machine tools of the latest pattern and it is the ultimate intention to operate practically the entire plant by means of electricity generated from the water power furnished by the James River. The company have their own foundry and engine building shop as well as every adjunct for hull construction. The officials state that there will be over 1000 men on the pay roll before the middle of the present year and nine vessels are now building or under contract.

A majority of the other projects for new shipyards which were broached early in 1900 are still supported by promises of ultimate realization on the part of their promotors. This appears to be the condition of the plan for the establishment of a steel shipbuilding plant at the mouth of the Mississippi River. The project for the erection of a first-class shipbuilding establishment in the immediate vicinity of New York City has not yet aterialized, nor has the scheme for the installation of a $1,000,000 yard at Chester, Pa., in which a prominent stockholder in the Roach shipyard was reported to be active.

Giving consideration to the growth of steel shipbuilding on inland waters, there is disclosed an outgrowth of conditions almost as favorable as is existent on the seaboard. Capt. Alexander McDougall, who introduced the "whalebacks" to the Great Lakes, has established at St. Louis a shipyard which has turned out several vessels of the "whaleback" type for service on the Mississippi. The Jenks Ship Building Company of Port Huron, Mich., and the Craig Ship Building Company of Toledo, Ohio, two firms who prior to the consolidation of the principal shipyards of the Great Lakes under the corporate title of the American Ship Building Company had essayed the construction of only moderate sized steel vessels, have within the past year undertaken the building of steel tonnage on an extensive scale. Finally, the new conditions whereby the steel shipbuilders of the Great Lakes have been enabled to enter competition and secure contracts for certain classes of ocean going vessels, has induced the American Ship Building Company to take steps looking to the establishment on the lower St. Lawrence of a thoroughly up to date shipyard where vessels taken through the St. Lawrence Canals from the Great Lakes in sections may be reassembled and where if desired independent building operations may also be carried on.

The Government of Paraguay has recently promulgated a law for the encouragement of shipbuilding which allows a subsidy of $15 in gold per ton for steam vessels and $5 per ton for sailing vessels of over 50 tons constructed in the shipyards of the republic.

The Effect of Annealing Upon Low Carbon Steel.[1]

BY HENRY FAY AND STEPHEN BADLAM.

The enormous demand for low carbon steel for structural purposes, plate, tubing and its many varied uses, offers great temptation for the manufacturer to allow almost any kind of material to pass through the mills without paying particular attention to the condition in which it appears upon the market. That the manufacturer does occasionally submit to the temptation to work the mills beyond their capacity is shown in the failure of the metal to meet certain physical requirements. That these failures are not more frequent is to be greatly wondered at, and it goes to show under what excellent control the steel plants are held. This occasional failure, however, makes it necessary to study carefully the conditions which, if not strenuously adhered to, will produce steel which will not only give trouble to the manufacturer himself, causing loss of time and perhaps material, but may also be a source of trouble to the buyer, and perhaps a source of danger to the public. The buyer in order to protect himself usually subjects the material to certain physical tests, which tell him whether the steel has the requisite strength. This determination of tensile strength was considered for a long time as entirely satisfactory and all that was necessary, but the presence in the steel of certain elements, such as phosphorus and sulphur, which were supposed to have an injurious effect on the physical properties, led the cautious buyer to test his steel both physically and chemically. It is a well-known fact that two pieces of steel having identically the same composition may have entirely different physical properties. This marked difference in physical properties was found to be due to the difference in heat treatment. We are able to say of any piece of steel that its physical properties depend primarily on its chemical composition, and secondly on the heat treatment to which it has been subjected. If we know then the chemical composition and the heat treatment we should be able to predict the physical properties.

The query now arises, if we have two steels of the same composition but of different physical properties, is there any means of knowing the heat treatment? Fortunately this can be answered in the affirmative. It has been shown by Sorby, Osmond, Stead, Ridsdale, Sauveur and other investigators that there is a direct relation between the heat treatment and the microstructure of steel. A study of the microstructure, together with the physical properties of metals, has given rise to the science which has been designated by the name Metallography.[2] For some varieties of steel and many alloys these relations have been very carefully worked out, and this information has added enormously to our knowledge of the properties of steel and other alloys. It was the object of this investigation to start with a steel of known composition and to study carefully the heat treatment, and how it would affect the physical properties and the microstructure. Having this information established for this class of material under normal conditions we have certain standards from which to draw our conclusions. This, however, does not give all of the information which we desire, as it is well known that work, such as rolling, hammering, &c., has a decided influence on the physical properties. This portion of the work, however, was impossible for us to carry out, and we present the paper in its present form with the hope that the subject will be of sufficient interest to be completed along similar lines by some practical metallurgist. The investigation is incomplete in another sense—viz., that we have heated our specimens to a certain definite temperature, and allowed the metal to cool from that temperature, but have not held the steel for any length of time at the temperatures to which it was heated. Our cooling was carried out slowly enough,

[1] *Technology Quarterly*, December, 1900. The illustrations accompanying this article are reproduced here through the courtesy of the *Technology Quarterly*.

[2] For the elements of the subject see the *Metallographist*.

as will be shown later on, for complete crystallization to take place, but according to Stead's[3] experiments coarse granulation takes place by holding the sample for some time at about 700 degrees C. This portion of the work is now in progress, and it is hoped to bring forth our completed results later. The material selected for this purpose was a low carbon steel, which was kindly furnished by the National Tube Company of McKeesport.

The steel which we used is generally classified as "extra mild steel." Many investigations have been conducted on mild steel, but none of the investigators have followed exactly the same manner of work. Before proceeding to the experimental work it will be necessary to review briefly the work which has already been done on mild steels.

Until the publication, in 1898, of Mr. Stead's paper on "The Crystalline Structure of Iron and Steel" it was tacitly assumed that all grades of steel, whether soft or hard, followed the general laws of structure as enunciated by Tschernoff and Brinnell. These two investigators were the first to formulate any laws connecting the heat treatment and the structure. Both of them experimented principally upon steels of medium hardness, about 0.3 per cent. of carbon. Their conclusions in regard to the structure were based upon the appearance of the fractures.

Tschernoff[4] summarized his conclusions as follows:

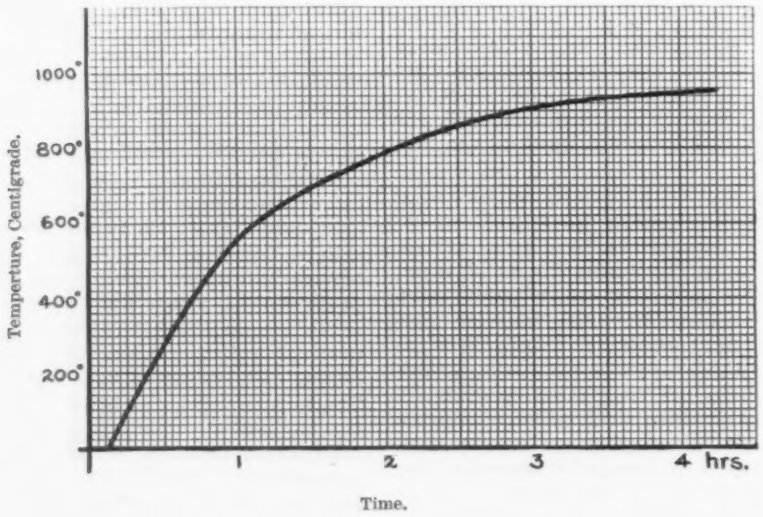


Fig. 1.—Heating Curve of Furnace.

Steel on solidifying has a crystalline structure. This may be prevented:

1. By simply reheating to a cherry red, when an ingot with a coarse structure will suddenly be transformed into a fine grained and strong product.

2. By hammering at a high temperature, and continuing the work down to a low temperature to a certain point, varying with different steels, below which the metal preserves its whole power of resistance.

3. Rapid cooling of the cast metal destroys the crystalline structure.

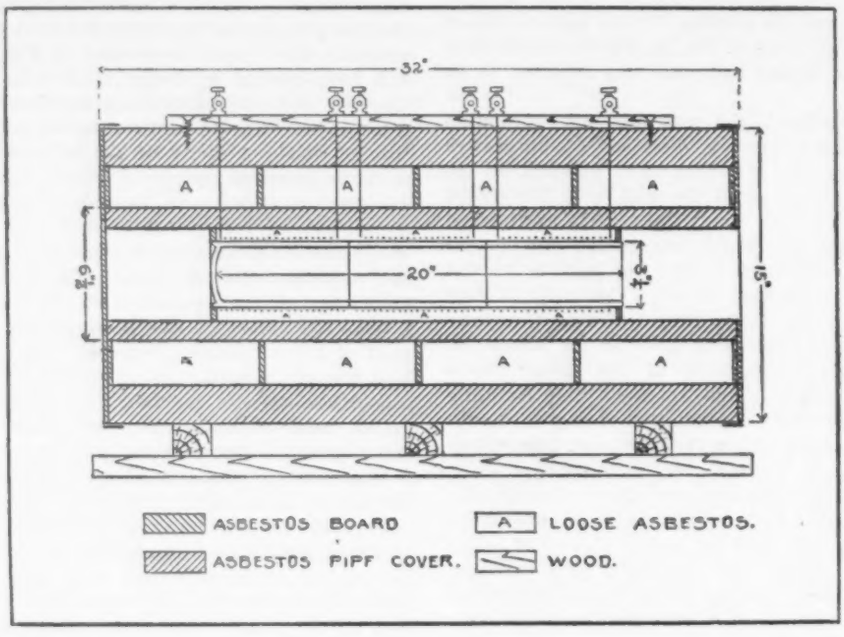


Fig. 2.—Section of Furnace.

Tschernoff points out the important fact that the higher the percentage of carbon, the lower is the point below which no change in structure occurs.

[3] "The Crystalline Structure of Iron and Steel." J. E. Stead, *Journal Iron and Steel Institute*, 1898, No. 1, 145. The *Metallographist*, Vol. I (1898), page 289.

[4] "The Structure of Cast Steel Ingots." *Proc. Inst. of Mech. Eng.*, January, 1880; translated from the Russian by W. Anderson.

"The Manufacture of Steel and the Mode of Working It." *Proc. Inst. of Mech. Eng.*, April, 1880; translated by W. Anderson.

Brinnell's[5] conclusions follow along the same line as those of Tschernoff, but are expressed more in detail. A few abstracts from his work, having a special bearing upon the subject, are given below:

1. Whenever steel loses its crystalline structure, other than by mechanical work, the change of texture will be found to occur simultaneously with the transformation of cement into hardening carbon, or *vice versa*, and the change will be complete only in the event of the carbon being converted by heat from cement into hardening carbon.

2. In order to effect the transformation of hardening into cement carbon in a steel heated to a white heat it must be allowed to cool slowly to a lower temperature than that necessary to change cement into hardening carbon.

3. If hardening carbon, in heating or cooling, is converted completely or largely into cement carbon, a crystallization occurs, yielding a fracture the coarser as the former texture of the steel was crystalline.

4. The crystallization of steel requires a certain amount of time as well as a certain amount of heat. If the duration of the cooling process is cut short by quenching in water the development of crystallization is partly or wholly prevented.

With regard to the development of a coarse crystallization, Brinnell says that on heating the steel to a point W, say 750 degrees, the size of the granules increases with the temperature, the coarsest being obtained by heating to the highest temperature, and the structure remains coarse whether the steel is quenched or cooled slowly from the temperature.

Within the last few years several important articles have appeared dealing with the effect of heat treatment upon soft and extra soft steels, the results of which seem to be quite different from those of the earlier experimenters upon medium and hard steels. These later researches are also characterized by the use of the microscope for the examination of the structure instead of the naked eye and fractured surfaces.

From his microscopic work upon soft steels and pure iron, Mr. Osmond[6] came to the following conclusions in regard to heat treatment:

1. Steel with 0.02 per cent. C. "It would seem that the structure of pure iron is almost independent of the temperature and the rate of cooling."

2. Steel with 0.14 per cent. C. "In proportion as the temperature of reheating is raised, other things being equal, the polyhedrons of ferrite enlarge, slowly at first, and keeping their forms, then more rapidly, until at 1000 degrees they become irregular and tend to lengthen into groups of juxtaposed bands. The pearlite generally remains exterior to the arrangement of ferrite and stratifies in seams."

The most important articles on this subject that have yet appeared have been by J. E. Stead.[7] His first paper on "The Crystalline Structure of Iron and Steel" revolutionized our ideas upon the effect of heat treatment on soft steels and showed that they followed laws of structure which so far have not been found to apply to carbon steels. Among the conclusions that Mr. Stead

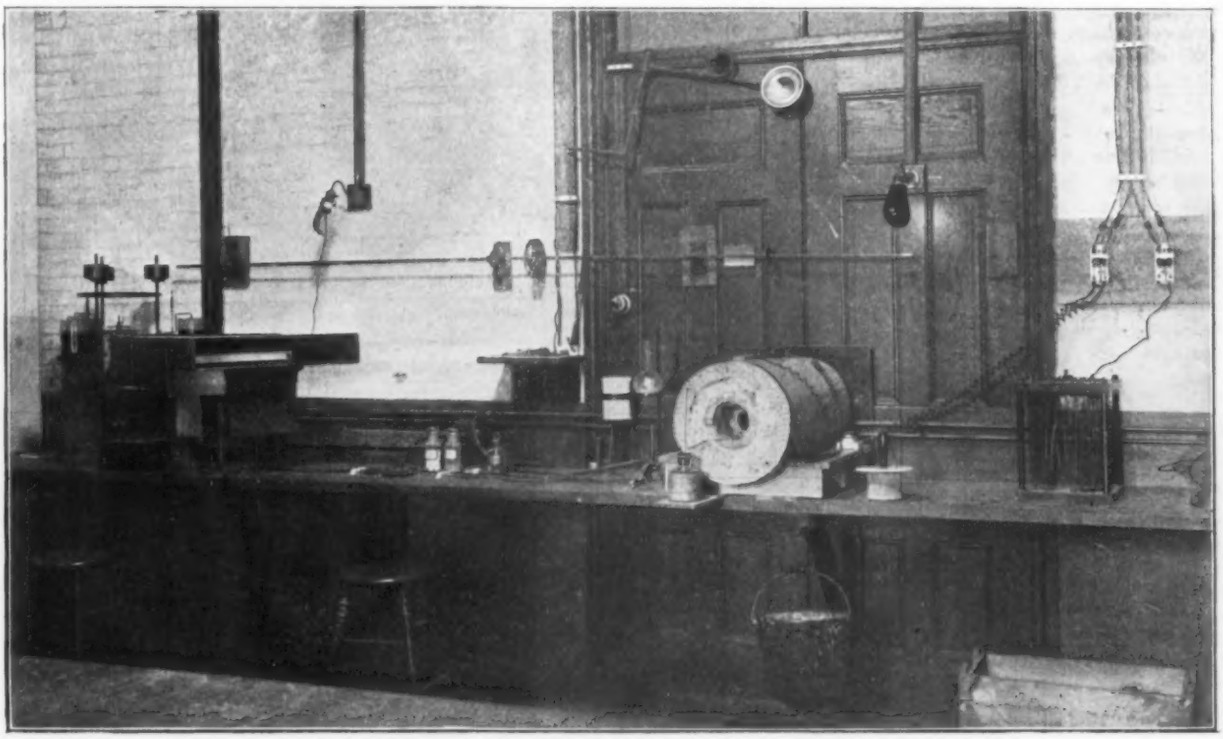


Fig 3.—Furnace, Pyrometer, &c.

draws we have selected the following, which have a bearing on the present work:

1. Granules and crystals should not be confused, for although a granule is built up of crystals, its external form is not crystalline, as it takes its shape from its surroundings. It is an allotrimorphic crystal, or more simply, a grain.

2. Grains formed in the solidification of liquid metals are large or small, according to whether the freezing is rapid or slow, and they take their form from their surroundings, and this is most irregular, owing to natural interference.

3. In carbonless pure irons or steels of fine grain produced by either forging or certain heat treatment the grains increase in size, slowly at 500 degrees C., and more rapidly at between 650 and 750 degrees, and it is possible, by heating at about 700 degrees for a few hours, to develop granular masses of exceeding coarseness. At 900 degrees the granules again become small, and heating to 1200 degrees apparently does not change them.

4. Granules in carbon steels 0.20 to 1.20 per cent. carbon do not grow in size by long continued heating at

[5] "The Changes in the Texture of Steel on Heating and on Cooling." Abstracted in *Journal Iron and Steel Institute*, 1886, I, 365.

[6] *Bulletin de la Société d'Encouragement pour l'Industrie Nationale* (5), 10, 476.

[7] *Bulletin de la Société d'Encouragement pour l'Industrie Nationale* (5), 10, 476.

700 degrees, but they increase in size slowly at first, and then more rapidly with each increment of temperature above 750 degrees C., the change point varying with the carbon. When, however, coarsely granulated steel is reheated again a little above 700 to 750 degrees the coarse structure vanishes.

5. In steels of from 0.10 to 0.15 per cent. carbon containing the pearlite in widely separated areas, on heating and quenching from about 750 degrees the large ferrite grains are not broken up, and the carbon apparently does not expand or diffuse beyond the original area, but when heated to 850 degrees and slowly cooled the carbon areas are found as a number of smaller segregations, and where the carbon has diffused the ferrite is found in small grains.

Mr. Stead's second paper, on "Brittleness Produced in Soft Steel by Annealing,"[8] follows the line of his previous paper, but brings out a number of new facts. Among other points he distinguishes two kinds of weakness—viz.:

1. Intergranular weakness, which occurs when the grains are imperfectly cohesive or are surrounded by a brittle envelope.

2. Cleavage weakness, which occurs where the grains are so oriented that the component crystals are all in the same phase. He explains the brittleness sometimes observed in annealed plates by saying that the rolling causes a tendency to such orientation, and that annealing develops this tendency.

Mr. Stead suggests that at about 900 degrees for soft steel Gamma iron is formed, and coincident with it the structure is refined. The results of the present investigation bear out this conclusion. Mr. Stead also makes the pertinent suggestion that the banded or laminated structure of the ferrite, observed in overheated steel, provided there is no intergranular separation, is a remarkably strong one.

Shortly after the publication of Stead's papers, Ridsdale published an article on "Brittleness in Soft Steel,"[9] containing much valuable material. He draws the following conclusions, "In order to avoid brittleness:

1. "There should not be too high an initial temperature nor 'soaking' at a high temperature for a long time."

2. "Work should be continued down to red heat, but not to a blue heat."

3. "If work has been continued unavoidably to near blue heat there should be no chilling, but slow cooling, and where possible subsequent heating, if only for a short time, to cherry redness. Also there should be absence of jar or vibration while cooling through the blue heat."

A year later, in 1899, Mr. Ridsdale published a very comprehensive paper on "Practical Microscopic Analysis for Use in the Steel Industries."[10] He emphasizes strongly the importance of soft steels and the neglect which they have suffered at the hands of the metallographists. His conclusions, which are derived from the study of numerous specimens of steel made by various processes and makers, are illustrated by photographs at 50 diameters.

His conclusions may be stated as follows:

1. Normal steel, work continued to a low red. The structure is regular and homogeneous, the grains small and ill defined.

2. Normal treatment and abnormal composition. The structure is in general the same as the preceding. Phosphorus tends to enlarge the grain slightly.

3. Normal steel heated too long or to too high a temperature. This shows an outer carbonless band with large grains, or if actually burnt, a separation of the grains.

4. Normal steel worked at too low a temperature or through a blue heat. This shows a strained structure with distinct flow lines. There is a breaking up of the surface grains and a loosening or actual rupture of the grain junctions.

"In general," Ridsdale says, "outside of normally treated specimens the effect of heat treatment far outweighs that of composition."

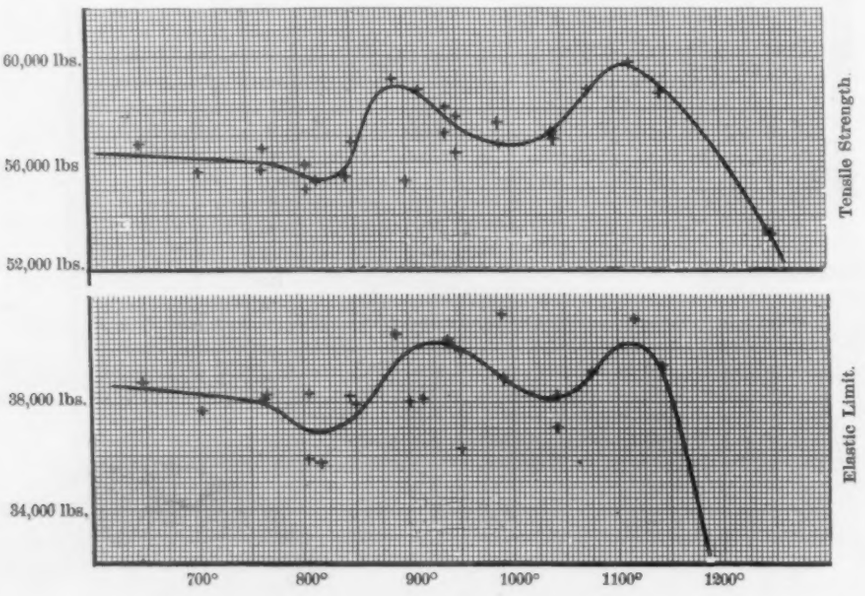


Fig. 4.—Curves of Tensile Strength and Elastic Limit.

Morse,[11] who worked on a steel containing 0.34 per cent. carbon, finds a diminution in tensile strength when held between 650 and 750 degrees, an increase from the latter point up to 900 degrees and a falling off from 900 to 1200 degrees. Beyond 1200 degrees the tensile strength rises again. The area of the grain increases up to 600 degrees, falls to a minimum at 900 degrees and then increases rapidly. The author notes the occurrence above 1000 degrees of the banded or ramified structure noted by Stead, and he reaches the same conclusion as to its being a strong structure.

In regard to the existence of a point of change in the physical properties at a temperature above 1000 degrees there are several articles which deserve mention. Ball published an article "On the Changes in Iron Produced by Thermal Treatment,"[12] in which he investigated the effect upon the tensile strength and magnetic properties of a steel containing about 0.10 per cent. carbon when slowly cooled and when quenched from various temper-

[8] *Journal Iron and Steel Institute*, 1898, II, page 137.
[9] *Journal Iron and Steel Institute*, 1898, I, page 220.
[10] *Journal Iron and Steel Institute*, 1899, II, page 102.
[11] *Trans. Am. Inst. Min. Eng.*, 1900, 29.
[12] *Journal Iron and Steel Institute*, 1890, I, page 85; 1891, I, page 103.

atures. The steel shows three critical points, one at 660 degrees, another at 900 degrees and a third at 1200 degrees, at which latter point the magnetic and physical properties reach a maximum.

Recently Roberts-Austen[13] has published a cooling curve of electrolytic iron which shows an evolution of heat at a temperature of 1132 degrees, and this he identifies with the point of maximum tenacity observed by Ball. This upper critical point coincides fairly closely with the second point of maximum tenacity observed in the present series of experiments.

Experimental.

The material which was used for these experiments was a low carbon acid Bessemer steel of a commercial

Fig. 5.—Etched by polishing.—Specimen No. 1.—Cooled slowly from 647 degrees.—Tensile strength, 56,660 pounds.—Magnified 73 diameters.

grade, and was kindly furnished by the National Tube Company of McKeesport, Pa. It represents the average material of this grade turned out by the company for the manufacture of pipes and tubes.

The chemical analysis was as follows:
C = 0.07. S = 0.058. P[14] = 0.10. Mn = 0.32. Oxides = 0.25. The carbon and manganese were determined by colorimetric methods.

The heat treatment in the mill was approximately as follows: The ingots were subjected in the soaking pits to a temperature of 1000 to 1200 degrees. They entered the roughing train at probably over 1000 degrees, and the mechanical work was continued to a full red heat. The specimens, 30 in number, were all cut from plates rolled from the lower two-thirds of the same ingot, and came in the shape of bars 18 inches long, 1¾ to 2¼ inches wide and ⅜ inch in thickness. The edges were planed. In order to heat the specimens uniformly and to a temperature which could be accurately measured, the usual forms of furnaces were found inconvenient. At the suggestion of C. L. Norton, a furnace heated by electricity was constructed and was found to answer all of the requirements most admirably.

The general principle on which the furnace is based is that when a conductor is traversed by a current heat is developed according to Joules' law, $W = C^2R$. The resistance of the wire, however, increases as the temperature rises, and as the loss of heat by radiation also increases with the temperature, it may be seen that for each difference of potential between the terminals there is a certain maximum temperature which may not be exceeded. The rise in temperature for 110 volts is shown by the curve in Fig. 1. By the use of 220 volts, however, the temperature may be readily raised to 1300 degrees.

The furnace consisted of a cylindrical muffle 20 inches long and 3¼ inches in diameter, wound with about 72 feet of No. 29 platinum wire and inclosed in an insulating jacket of about 15 inches external diameter and 30 inches long. The muffle was made by taking three clay porous cups, sawing the bottoms off two of them and placing the three in line so as to form a hollow cylinder closed at one end. The bottom of the third cup was perforated by a ¾-inch hole, so that a tube could be inserted and a neutral gas, such as nitrogen or carbon dioxide, drawn through to prevent oxidation of the specimens. It was not found necessary, however, in these experiments.

The three sections of the muffle were wound independently, each with about 24 feet of No. 29 platinum wire, and the ends were brought out to six binding posts on the outside of the furnace. The insulating jacket consisted of two pieces of asbestos pipe cover, one 12-inch piece outside and a 4-inch piece inside. The spaces between the two pipe covers, as well as between the inner pipe cover and the muffle, were packed with fibrous asbestos. The whole furnace was supported in a wooden cradle and is shown in section by the accompanying sketch, Fig. 2.

The electric current was taken from the three-wire mains of the incandescent circuit by the three coils in parallel. For temperatures below 800 degrees 110 volts were used, and for temperatures above 800 degrees the furnace was heated to 800 degrees on the 110-volt circuit and then shifted to the 220-volt circuit.

The efficiency of the furnace was very good indeed. With a difference of potential of 110 volts the current passing varied from 10 amperes when cold to 6.5 amperes when hot, and the furnace could be heated to 800 degrees in about one and one-half hours. (See Fig. 1.)

The pyrometer used was of the Le Chatelier thermo-electric type. The junctions consisted of a platinum and a platinum 10 per cent. iridium wire, and were protected by perforated clay tubes. The junction was simply laid on top of the bar in the furnace, but the heating was so gradual that this represented very closely the actual temperature.

The galvanometer was a four-coil, astatic instrument suspended from the ceiling to prevent vibration. The source of light was a 32 candle power lamp, a narrow

Fig. 6.—Etched by polishing.—Specimen No. 20.—Cooled slowly from 1247 degrees.—Tensile strength, 53,230 pounds.—Magnified 73 diameters.

adjustable slit being interposed between it and the mirror. The image of the slit was thrown onto a ground glass strip graduated in millimeters.

The pyrometer was calibrated against the following substances:

Boiling water, 100 degrees C. Boiling naphthalene, 219 degrees. Boiling sulphur, 445 degrees. Freezing aluminum, 660 degrees. Freezing gold, 1072 degrees.

The temperatures above 1072 degrees were obtained by extrapolation on the calibration curves. The general arrangement of furnace, galvanometer and wiring is shown in the photograph of the apparatus, Fig. 3.

[13] The *Metallographist*, No. II, 186.
[14] Although high, the phosphorus seems to have had no effect on the size of the grain.

The treatment of the specimens was carried on as follows: A bar, numbered at each end with its serial number, was placed in the furnace. Upon it, and extending to a point one-third the length of the bar, was placed the pyrometer junction. The mouth of the muffle was then closed with a wad of loose asbestos and the heating was begun. The current was turned on at 110 volts with the coils in parallel until a temperature of 800 degrees was reached, when 220 volts were turned on and the furnace heated to the desired temperature. The circuit was now broken and the maximum temperature recorded. The bar was allowed to cool in the furnace, and after 24 hours, at the end of which time it was still at a temperature of 80 to 100 degrees, was removed. All the bars except Nos. 23 to 27, inclusive, were allowed to cool in the furnace. The latter bars were removed from the furnace just after reaching the maximum temperature and thrown into a box of sand and allowed to cool naturally, reaching the atmospheric temperature in a couple of hours. The furnace was so well protected from radiation that the specimens which were allowed to remain in the furnace were cooled extremely slowly.

The bars, after the heat treatment, were machined for a space of about 12 inches in the middle of the bar to remove the scale and allow an accurate measurement of the cross section of the specimen. After measuring the cross section the bars were marked for the elongation in 5 inches and broken in a testing machine.

Fig. 7.—Etched 30 seconds $^1/_{10}$ HNO_3.—Specimen No. 3.—Cooled slowly from 889 degrees.—Tensile strength, 59,120 pounds.—Magnified 73 diameters.

The testing machine used was a 50-ton Olsen, arranged to be run by an electric motor. With the motor running at a constant rate the load rose rapidly at first and then slowed up suddenly as shown by a drop of the beam. The stress at which this occurred was taken as the elastic limit, though its accuracy is probably questionable to the extent of 1000 pounds. After the elastic limit was passed the piece began to elongate more rapidly and the load to rise more slowly up to a maximum stress, beyond which the piece began to draw down under a diminishing load. The maximum load was recorded as the ultimate strength of the material. As the piece drew down two lines of greatest stress, forming a St. Andrew's cross, showed themselves by faint depressions across the bar. These depressions enlarged until the fracture occurred, beginning at the center and extending to the sides. This mode of fracture, which was characteristic of all the specimens, was beautifully shown by specimen No. 10, with which the machine was stopped just after the middle had parted and before the break had reached the edges. The fractured bars were placed end to end and the elongation was measured and recorded. Owing, however, to the way in which the bars parted the ends could not be placed in perfect contact, and there is consequently some uncertainty in the accuracy of the percentage of elongation.

From the facts obtained in the above described manner the following data were calculated:

1. Temperature from which annealed.
2. Maximum load, pounds per square inch.
3. Elastic limit, pounds per square inch.
4. Elongation, per cent. of in 5 inches.

The tabulated results are given in the table and are shown graphically in Fig. 4.

The specimens for microscopic examination were cut from the ends of the fractured bars and numbered with the serial number. A section, the thickness and width of the bar and 1 inch long, was sawed from a point 3 inches from the end of the bar. This was in order to secure uniformity of heating and at the same time be sure that the section had not been distorted by the stress during pulling.

The small block so cut was then planed and filed down 1-16 inch on the flat surface to remove all surface injuries. The specimen was then beveled on the upper edges and ground on three grades of emery cloth, Nos. 80, 100 and 120, and four grades of Rupert's French emery paper, Nos. 10, 1, 0 and 00. This left the specimen with a dead smooth surface ready for the final polishing, which was done with the finest jewelers' rouge and water upon wash leather stretched on a square tile. The polishing was continued until the specimen was entirely free from scratches and had attained a mirror-like surface.

Tabulated Results Shown Graphically in Fig. 4.

Specimen number.	Temperature. Degrees C.	Area.	Tensile strength. Pounds per square inch.	Elastic limit. Pounds per square inch.	Elongation in 5 inches. Per cent.
1	647	0.5670	56,660	38,790	31.0
18	703	0.5827	55,620	37,760	32.2
2	764	0.5767	55,690	38,150	31.2
6	765	0.5740	56,570	38,320	29.0
4	805	0.4953	55,880	38,370	29.8
16	806	0.6829	55,000	35,870	28.4
15	817	0.6149	55,310	35,780	31.6
8	844	0.5768	55,470	38,140	30.6
19	850	0.6063	56,790	37,930	30.6
3	889	0.5923	59,120	40,520	30.0
11	901	0.5920	55,280	38,010	33.2
17	914	0.4388	58,750	38,130	...
14	939	0.7077	57,110	40,260	33.6
5	939	0.5706	58,120	40,310	...
9	950	0.6002	57,760	39,980	32.0
22	951	0.5244	56,300	36,230	30.6
7	988	0.4363	57,530	41,260	28.4
21	990	0.5907	56,690	38,920	28.2
28	1,041	0.6078	57,190	37,020	31.2
10	1,042	0.6538	56,840	38,230	31.0
12	1,075	0.6134	58,760	39,130	29.8
29	1,117	0.5599	59,770	41,080	30.6
13	1,143	0.4831	58,600	39,340	29.8
20	1,247	0.5667	53,280	21,170	31.2
*23	695	0.6764	58,880	43,610	32.5
*24	805	0.7256	58,530	38,600	32.5
*27	891	0.6089	60,150	39,000	29.0
*26	990	0.6355	60,530	36,980	...
*25	1,247	0.5855	58,100	35,870	30.6

*Specimens 23 to 27, inclusive, were rapidly cooled.

During the progress of the polishing the specimens were examined at intervals under the microscope. When the scratches were all removed they showed a ground mass of ferrite with small yellowish markings of pearlite unevenly distributed over the field. The pearlite stood out slightly in relief, due to its superior hardness. This is shown in Figs 5 and 6. The uneven distribution of the pearlite was quite noticeable even to the naked eye, the block presenting a banded or *moiré* appearance. Under the microscope the carbon was seen to be highly segregated, some areas being thickly strewn with the pearlite, while others showed only scattered particles.

When the polished specimens had been examined they were etched. The best results were obtained by immersing one end of the specimen in 10 per cent. nitric acid for 30 seconds, and washing first with running water and then with alcohol. The surface was dried by warming gently. The etched specimens showed very clearly the granular structure of the steel, the points between the grains being well developed. It is well known that erroneous results are likely to follow the use of nitric acid as an etching medium, but after trying many other agents with indifferent success it was decided to use nitric acid uniformly throughout the series.

The microscope used was one made by Reichert of Vienna especially for metallographic work. It was fitted with an adjustable mechanical stage, vertical illuminator and iris diaphragm. The field was illuminated by means of a 16 candle power incandescent lamp placed 18 inches from the microscope. A 3-inch bull's-eye condenser was interposed between the two.

After the preliminary examination the specimens were photographed. The camera for this purpose was of the vertical type and was used with the eye piece in the microscope just as for eye examination. The ground glass screen was provided with a small circle of clear glass in the center, and the microscope was focused by

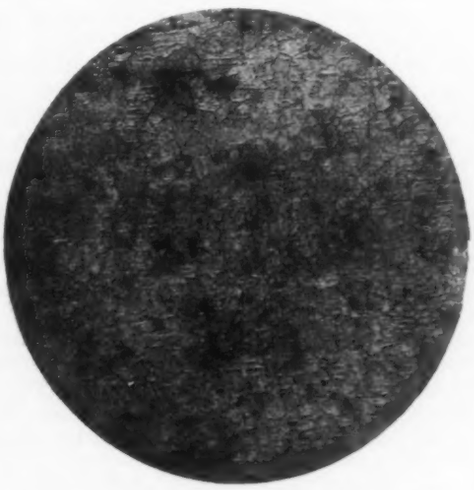


Fig. 8.—Etched 30 seconds $^1/_{10}$ HNO_3.—Specimen No. 7.—Cooled slowly from 988 degrees.—Tensile strength, 57,530 pounds.—Magnified 73 diameters.

placing a low power eye piece, with the ocular lens removed, upon it and focusing its smaller field. The exposure varied from 20 to 25 minutes. The photographs were taken at 84 diameters and are reproduced at 73 diameters.

Discussion of Results.

After the specimens had been heated they were, as a rule, covered with a greater or less amount of scale. Those heated to below 750 degrees had a thin, powdery coating of red oxide upon them, readily removable with the finger. The specimens heated to above 750 degrees had a coating of black magnetic oxide varying in thickness from the thinnest possible film at 800 degrees to 1-32 inch at 1200 degrees.

The machining of the specimens gave no indication of the temperature to which they had been heated; even the 1247-degree specimens were apparently uninjured. The first difference in behavior was noted when the tensile tests were made. The specimens heated to below 1200 degrees pulled in a perfectly normal manner, having a high elastic limit and ultimate strength, and, when finally breaking, showing a smooth face and fibrous structure. The two specimens heated to 1247 degrees behaved differently. The elastic limit was decidedly lowered, to 21,170 pounds in the case of the slowly cooled bar. When the elastic limit was passed, however, the bars held out remarkably well, the slowly cooled bar breaking at 53,280 pounds and the rapidly cooled bar at 58,100 pounds per square inch. After fracture had occurred it was seen that the surface of these two bars had roughened, having the appearance of a piece of putty when pulled apart. This was much more noticeable, in the case of both bars, upon one side than upon the other, and as the two bars were heated in the furnace together it may be that the rougher sides were more exposed to oxidizing gases than the other sides which were in contact with each other. To settle this point will require further experimental work. The fractured areas of these two bars showed some bright crystalline spots resembling the grain of overheated carbon steel.

The results of the tensile tests as shown by the table and the curves plotted from it seem to indicate:

1. That there is a fair degree of constancy in the tenacity of the bars heated to below 850 degrees, with possibly a slight falling off between 800 degrees and 850 degrees.

2. That at 890 degrees there is a sudden rise in the tensile strength from 56,790 pounds to 59,120 pounds per square inch.

3. That beginning at 900 degrees there is a slight falling off, reaching a minimum of 56,690 pounds at 1000 degrees, from which point it rises again.

4. That at 1125 degrees the strength reaches a second maximum of 59,000 pounds.

5. That from 1143 degrees there is a very decided falling off in the strength, reaching 53,280 pounds at 1247 degrees, beyond which point the experiments were not carried.

The concordance of the results obtained is seen to be quite good, most of the observations lying within 500 pounds of the mean curve. One result only, No. 11, lies widely off, showing a discrepancy of 3600 pounds. It lies, however, in a portion of the curve where the strength changes rapidly, so a small error in the temperature would make a large apparent error in the strength.

The results of the elastic limit experiments are very similar to those of the ultimate strength, but show much larger variation, and consequently the curve is more doubtful; but it seems to be of the same nature as the ultimate strength curve.

The results of the elongation determinations were very unsatisfactory, owing, as already stated, to the impossibility of matching the ends together. As well as could be determined, however, they seem to show:

1. A decrease in elongation to 800 degrees, at which point it is about 29 per cent.

2. A rise to 950 degrees, where it reaches 32.5 per cent.

3. A sudden decrease to 1000 degrees, at which point it again reaches 29 per cent.

4. A gradual increase up to the limit of the experiments, 1247 degrees, at which temperature the elongation is 31.2 per cent.

The rapidly cooled specimens show a tensile strength quite uniformly from 2000 pounds to 2500 pounds higher

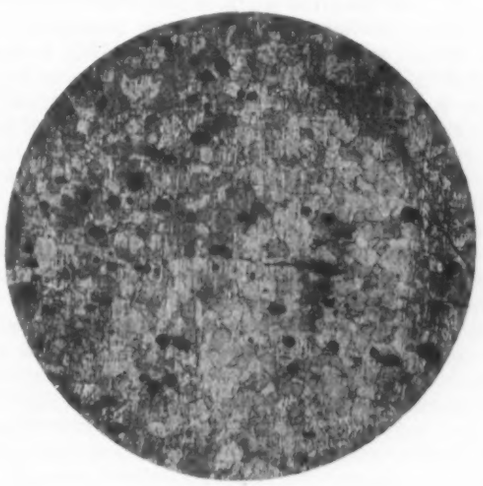


Fig. 9.—Etched 30 seconds $^1/_{10}$ HNO_3.—Specimen No. 28.—Cooled slowly from 1041 degrees.—Tensile strength, 57,190 pounds.—Magnified 73 diameters.

than the corresponding slowly cooled specimens, with the exception of the 990-degree rapidly cooled bar, which broke at 60,530 pounds, or even higher than the 900-degree bar. The stretch limit shows a gradual decrease from 43,000 pounds at 695 degrees to 36,000 pounds per square inch at 1247 degrees. The variations in the elongations seem to be less than the errors of determination.

The microscopic examination of the different specimens has been disappointing. On account of the very small amount of carbon it is extremely difficult, if not impossible, to distinguish the different specimens which

have been etched only by polishing in relief. There is in all specimens a ground mass of structurally free ferrite through which are disseminated particles of another constituent which we would expect to be pearlite, but which looks very much more like structurally free cementite, Fig. 5. In no case was it possible to observe the characteristic pearlite markings. The appearance is usually that of an amorphous granular mass which stands in relief. With increase of temperature there is a greater tendency for this constituent to segregate in masses. The scratches which appear on the specimens from polishing would also seem to indicate the presence

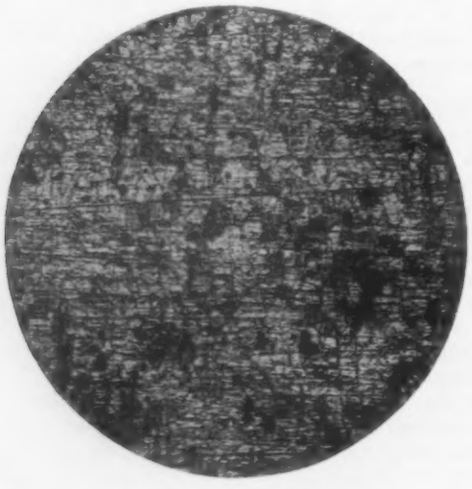


Fig. 10.—*Etched* 30 *seconds* $^1/_{10}$ HNO_3.—*Specimen No.* 13.—*Cooled slowly from* 1143 *degrees.—Tensile strength,* 58,600 *pounds.—Magnified* 73 *diameters.*

of cementite, as the course of the scratch is usually interrupted and continues beyond the particle. Figs. 5 and 6 show the general appearance of the microstructure of the specimens which have been etched by polishing in relief.

The examination of specimens etched with dilute nitric acid shows that the grain is practically uniform in size in those specimens annealed from 850 degrees and below. When we come to specimen No. 3, Fig. 7, slowly cooled from 889 degrees, however, we see a marked change in the structure. The granular structure has disappeared and has been replaced by a fine close structure resembling porcelain. Specimens Nos. 17, 5 and 9, slowly cooled from 914 degrees, 939 degrees and 950 degrees respectively, show a fine structure but with grains visible under a magnification of 84 diameters.

Specimen 7, Fig. 8, shows again a larger development. Specimens 12 and 13 show a grain of a size not greatly different, but with a structure very different. Specimen 13, Fig. 10, shows parallel striations or bands appearing as alternating dark and light streaks. These bands occur in groups in which the component lines are parallel, but in the different groups they are nearly at right angles. Specimen 20, which was cooled from 1247 degrees, shows an enormous increase in the grain and also a marked development of these bands or striæ through the grains. This is well shown in Fig. 11.

A comparative study of the results of the tensile tests and the microscopic examination shows in general a fairly close relation between the size of the grain and the tensile strength. The larger the grain the lower is the tensile strength and elastic limit. The latter seems to be affected by the grain more than the former. The elongation does not show any definite relation to the size of the grain.

The bars which were cooled slowly from below 850 degrees show a tensile strength of from 55,500 to 56,500 pounds and a grain of a fairly large diameter. Passing from 850 degrees to 900 degrees there is a very marked increase in the tensile strength, 59,000 pounds, and an equally sudden diminution in the size of the grains, the latter becoming the finest noted in the series. From 900 degrees to 1000 degrees the gradual increase in the grain is acompanied by a decrease in the strength, the two being quite proportional.

Above 1050 degrees there is an increasing size of grain to a slight extent, but the structure here is changing to the banded type. The strength increases through this range to 1143 degrees, showing that this structure is a strong one and masks the effects of the grain structure. Above 1143 degrees, however, the grain increases rapidly and the strength decreases correspondingly.

In general the following tentative conclusions may be drawn:

1. For this particular steel annealing seems to give two points of maximum tenacity and elastic limit, one at 890 degrees, and another at 1125 degrees. Below 850 degrees the properties of the steel do not change to any appreciable extent, and between 890 degrees and 1125 degrees the steel shows a minimum value at 1000 degrees. Annealing from temperatures above 1125 degrees causes a decrease in strength with increasing temperature.

2. The size of the grain is apparently constant or increases but slowly at temperatures below 850 degrees. At 890 degrees the grain is suddenly refined, and the structure becomes close and almost porcelain-like. From temperatures above this, annealing seems to cause a gradual increase in size slowly up to 1125 degrees, and rapidly from that point up to the limits of the experiments.

3. Above 1100 degrees a new type of structure appears which seems to consist of parallel bands and striations sometimes crossing the grain junctions. This type of structure has not, however, been carefully studied, and we are not prepared at present to state its significance.

4. Below 1000 degrees there is a fairly close relation between the size of the grain and the strength, the latter falling off as the former increases, and *vice versa*. A fine grain indicates a high tensile strength and elastic limit. The latter is affected more than the former.

5. Above 1000 degrees the banded structure appears to increase the strength and also somewhat retard the

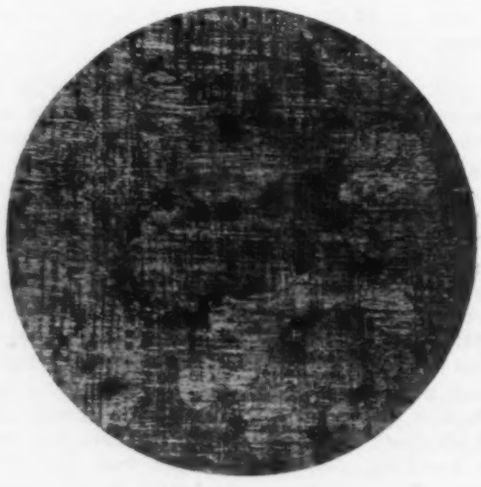


Fig. 11.—*Etched* 30 *seconds* $^1/_{10}$ HNO_3.—*Specimen No.* 20.—*Cooled slowly from* 1247 *degrees.—Tensile strength,* 53,280 *pounds.—Magnified* 73 *diameters.*

grain development, but at 1125 degrees the latter takes the ascendency as indicated by the decrease in strength from that point to 1247 degrees.

The banded structure when not accompanied by an excessive grain appears to be a very strong form.

6. Rapid cooling, as in the open air, gives a higher tensile strength than does slow cooling from the same temperature.

7. The size of the grain of the more rapidly cooled specimens (23-27) follows the same general laws as for the slowly cooled, except that the grain for the same temperature is uniformly smaller.

In connection with the point of maximum tenacity and the related change in structure it may be said that

its position, 1140 degrees, corresponds closely with the highest critical point observed by Roberts-Austen in his cooling curve of electro-iron, and also with the point of maximum tenacity observed by Dr. Ball.

It is desired to express the thanks of the authors to C. L. Norton, without whose aid and kindly advice much of the work would have been impossible; likewise to Professors Miller and Schwamb for the use of much valuable apparatus.

The Philadelphia Foundrymen's Association.

The one hundred and sixth regular meeting of the Foundrymen's Association was held at the Manufacturers' Club, Philadelphia, Pa., Wednesday evening, March 6, the president, Thomas I. Rankin, occupying the chair. In the absence of the secretary the chair appointed James S. Stirling to act as secretary *pro tem.*

There was a large and representative attendance, among whom may be mentioned:

A. C. Pessano, Geo. V. Cresson Company, Philadelphia.
H. O. Evans, Thos. Devlin & Co., Philadelphia.
Geo. C. Davis, chemist, Philadelphia.
C. S. Koch, Wm. Sellers & Co., Philadelphia.
A. A. Miller, *The Iron Age*, Philadelphia.
A. G. Warren, J. W. Paxson Company, Philadelphia.
W. O. Steel, Gregor Company, Philadelphia.
J. Sellers Bancroft, Wm. Sellers & Co., Philadelphia.
J. A. Taylor, Wm. Cramp & Sons S. & E. B. Company, Philadelphia.
J. Jones, Wm. Cramp & Sons S. & E. B. Company, Philadelphia.
J. A. Finley, Wm. Wharton, Jr., & Co., Philadelphia.
Jas. R. Strain, R. Wetherill & Co., Chester, Pa.
H. Dickson, Neafie & Levy S. & E. B. Company, Philadelphia.
S. G. Flagg, Jr., S. G. Flagg & Co., Philadelphia.
J. Hy. Pepper, Philadelphia.
F. C. Price, E. J. Etting, Philadelphia.
Wm. Sellers, Wm. Sellers & Co., Philadelphia.
Geo. Ellicott, Southwark Foundry & Machine Company, Philadelphia.
D. S. Creswell, Philadelphia.
Alfred Rex, Ferro Carbon Casting Company, Frankford.
Gus. Williams, Enterprise Mfg. Company, Philadelphia.
T. B. Harkins, T. B. Harkins Foundry & Machine Company, Bristol.
G. E. Pickup, the Adams Company, Dubuque, Iowa.
W. D. Thomas, *Iron Trade Review*, Cleveland, Ohio.
W. Hanson, Pennsylvania Iron Works Company, Philadelphia.
G. Rebman, G. Rebman & Co., Philadelphia.
Howard Matlack, Crocker Bros., New York, N. Y.
W. Wood, R. D. Wood & Co., Philadelphia.
P. C. Van Fleet, I. S. Sheppard & Co., Philadelphia.
J. Blankley, Tioga Foundry Company, Philadelphia.
W. L. Taylor, Tioga Foundry Company, Philadelphia.
I. R. Newkirk, J. B. Newkirk & Co., Philadelphia.
Geo. T. Marsh, S. Baltimore Foundry, Baltimore, Md.
Thos. Maher, Crown Smelting Company, Chester, Pa.
O. Schaum, Schaum & Uhlinger, Philadelphia.
Thos. I. Rankin, Abram Cox Stove Company, Philadelphia.
J. S. Stirling, Harlan & Hollingsworth Company, Wilmington.

The minutes of the previous meeting were dispensed with in the usual manner. No business of importance was before the association and the presentation and reading of papers was proceeded with. A paper on "The Erratic and Systematic Grading of Pig Iron by Analysis," by Thomas D. West of Sharpsville, was presented and copies distributed to those present.

Antonio C. Pessano, vice-president of the National Foundrymen's Association, was then introduced and presented a paper on "The Organization of Manufacturers a Necessity, if the Best Results are to be Obtained from Organized Labor" (which is printed elsewhere). Mr. Pessano prefaced his paper with a few remarks, in which he said "that the greatest point brought out by the Cleveland strike was the benefit of organization for the protection of manufacturers. These organizations, if on a proper basis, would be the means of avoiding strikes, lockouts, &c., and the better enable reasonable adjustment of differences between employer and employees."

Considerable discussion followed the reading of the paper, Messrs. Sellers, Pfahler, Williams, Rankin and others taking part, and the various parts and points of the recent agreement between the National Foundrymen's Association and the Iron Molders' Union of North America were explained by Mr. Pessano, after which it was moved and seconded that a suitable number of copies of Mr. Pessano's paper be printed at the expense of the association and distributed to the men in the various foundries. This motion by amendment was referred to the Executive Committee with power to act. The motion was favorably acted upon and a vote of thanks was then tendered Thomas D. West and Antonio C. Pessano for their interesting papers, after which the meeting adjourned.

The members and their friends then proceeded to the roof garden of the club, where the usual luncheon was served, Thomas I. Rankin performing the duties of toastmaster in his usual pleasant manner, calling in turn upon Walter Wood, Alfred Rex, G. E. Pickup, J. R. Newkirk, J. W. Finley, each of whom responded with a short address, after which the social session of the association came to a close.

Dominion Iron & Steel Company.

The Dominion Iron & Steel Company, Limited, are offering at $85 and earned dividends, $3,000,000 of 7 per cent. cumulative preferred stock out of a total issue of $5,000,000, subject to be called in by the company at $115 and accrued dividends. The company have a first mortgage of $8,000,000 of 5 per cent. gold bonds and $15,000,000 common stock. The announcement makes the statement that if the production from the company's works be as estimated, 300,000 tons of pig metal and 60,000 tons of steel blooms in 1901, and thereafter 400,000 tons of iron and steel per annum, made from foreign (Newfoundland) ore, the bounties to be received from the Canadian Government will be as follows:

1901	$870,000
1902	2,075,000
1903	1,850,000
1904	1,450,000
1905	1,000,000
1906	625,000
1907	225,000
Total	$8,095,000

A. J. Moxham, the general manager, makes the following statements in a letter to H. M. Whitney, the president:

Dear Sir: I am glad to advise you that No. 1 furnace is in successful operation, and we have been able to measure results by accomplished facts. Whatever doubt may have existed as to the manufacturing possibilities at Sydney are now removed. Speaking in detail:

1. *Iron Ore.*—The developments at Bell Island, both by the drilling done and by headings put in, have demonstrated the certainty of the ore supply. The ore under cover is of better quality than we had counted on as standard. It exists in a bed of full depth—low in silica and high in iron. Notwithstanding the fact that we mined last year only about 120,000 tons, and that we unloaded this by hand instead of by machinery, and that we charged off into this small tonnage the expense of a long strike at Bell Island, the cost of the ore delivered at our dock, f.o.b. steamer, was only $1.62 a ton. Our estimate is based upon the figure of $1.25. This result shows our estimate to be a safe one. The ore, as anticipated, works kindly in the furnace, and guarantees to us a large product per furnace.

2. *Limestone.*—We have two supplies—Georges River and Marble Mountain. We are operating at present with the Georges River stone at a cost of 60 cents a ton, which is within our estimate. The unusual purity of our flux has enabled us to control both the silica and the sulphur in our pig metal to an unusual degree, and with the use of a minimum amount of flux. We have in our very pure flux an asset of great value.

3. *Coal.*—We are operating our by-product ovens with unwashed coal, nevertheless the coke manufactured is of excellent physical quality. It is capable of hard driving and of maintaining the burden in the blast furnace without trouble. While slightly higher in sulphur—as must be the case until we wash it—our pure flux, as stated, renders this no disadvantage to us. We have demonstrated that the question of washing is not a necessity, but purely an economic question. The coke from washed coal will be fully equal to the celebrated Connellsville standard—the sulphur will be no higher, the ash lower and carbon higher.

4. *Labor.*—The plant is constructed with every modern labor saving device, and, after that interval of time necessary to get every new plant well organized in its labor department, our cost sheet will challenge comparison with that of any steel plant elsewhere.

5. *Cost of Production.*—I am confirmed in my opinion, hitherto expressed, that after crediting the value of the by-products from the coke ovens, the cost of our pig iron should not exceed $5.50 per ton after everything has been reduced to steady practice. The quality is all that could be desired.

In conclusion, we are safe in counting upon a reasonable profit from the start and a handsome increase in the same as the product reaches its maximum.

Lake Iron Ore Matters.

DULUTH, MINN., March 10, 1901.—There has been a very warm time the past week or two between the Oliver Iron Mining Company and the Cleveland Cliffs Iron Company as to lands in and about Negaunee. There has, in fact, been a boom in these lands on account of the endeavor of these two concerns to capture as much of the surrounding acreage as possible.

Marquette Range.

In this correspondence a month or more ago I spoke of the Maas options at Negaunee that the Cleveland Cliffs had taken and on which they put five diamond drills, working day and night. This option has now been taken up. Though the drills had scarcely sufficient time to test the deep ground in which the ore is supposed to exist, the Cleveland Cliffs were sufficiently assured of the situation and they closed the deal, and the cash, about $400,000, is now passing at Cleveland. The Bessemer end of the Negaunee mine coincides with the limit of the Maas lands and several holes put down by Mr. Maas, and later by the buyers, have found ore. It is probable that a large and valuable mine will be discovered in the Negaunee basin here. In addition to these purchases the same company have secured a number of other tracts, paying $14,000 for one 18-acre piece and other and even larger sums for other pieces of wild land. They have also secured a large portion of the shore rights of Teal Lake, and the Oliver Company have got the rest, and it is expected that drilling and exploration will show a mine under the lake. The geological conditions at the lake seem much similar to those of Lake Angeline at Ishpeming, where a splendid body of ore has been opened by the companies there. The Cambria mine has drifts running toward the lake, and the Negaunee, which occupies a place in the same valley, is about a mile east. The Oliver Company have secured the lands at Negaunee known as the race track, paying therefor a good price. This tract is directly on the strike of the ore bearing formation and is considered very promising. All these things, combined with the work of the Cleveland Cliffs upon the old Pioneer Iron Company lands, on which ore has doubtless been found in satisfactory quantity, though nothing is given out officially, and combined with the possession of the Queen group by the Olivers, and of the Negaunee by the American Mining Company, make Negaunee one of the most active and promising points in the Lake region just now. The indications are that the place will soon rival Ishpeming as a Marquette range center. It has been fortunate for Negaunee that such a company as the American and such a manager as Capt. Sellwood have the Negaunee mine, for any small concern would have given up in despair and from lack of funds after the experiences at that mine during the past year. There has been a series of costly experiences, caves, water and the like, that a few years ago and in the hands of a less strong company and less experienced man would have resulted in the abandonment of the mine. Now it is a bigger mine than ever and will produce an immense tonnage this year.

The Oliver Company have been looking at the Barasa with a view to taking options, but have closed nothing yet. The company have taken options on the Lucy and East Negaunee mines and will explore them at the earliest date.

Mesaba Range.

The most recent moves of the Lake Superior Consolidated Iron Mines (J. D. Rockefeller) do not, on the surface, indicate any desire to enter the Morgan combination. The company have just completed the purchase of all the stock of the Spruce Mining Company, a Kimberley concern, who control the Spruce and Cloquet mines at Eveleth and a small part of the town site there. The price paid is supposed to be about $800,000 for the $100,000 of stock. The Spruce was opened less than two years ago by Mr. Kimberley, who paid $75,000 bonus for the mine and agreed to a royalty of 30 cents a ton and a 50,000-ton annual minimum. Last year he mined 101,000 tons and there are now about as much on stock, with a daily hoist of 1200 tons (27,000 tons in February), with the stopes not yet attacked. There are some 5000 feet of main level openings. The mine is in charge of Capt. Harry Roberts, one of the most successful and energetic mining men of the entire Lake region. Its surface equipment is of the finest and all the buildings are of steel. There are some 7,000,000 tons of high grade Bessemer in the property. The Cloquet is a smaller mine directly adjoining and operated in connection with the Spruce. It is understood that the Kimberley interests, under Capt. Roberts' direction, will at once proceed to open a tract close to the Commodore mine at Virginia, where a splendid body of fine ore was shown two years ago.

There are several important negotiations under way for Mesaba mines, both by combined and outside interests. The J. J. Hill interests have continued their policy of tying up tonnage of new properties, and have many millions of tons under traffic agreement, in addition to what they entered the century with.

The Minnesota Iron Company have been figuring on stripping their new Hobart, formerly called the Fay, located at Virginia, but have made no decision as yet. Some of the mine is under a surface of not far from 40 feet, and this part may be stripped.

The Mahoning have just begun stripping for the year and will move some 300,000 yards of surface during the season. The mine will probably ship about as much as last year.

Explorations will commence at once on lands in 28, 58-20, for H. Roberts and others. On section 3, 57-21, a drill is at work for the lessees, and it is reported that the showings are excellent.

A. P. Silliman & Co., mining engineers and chemists of Hibbing, have just issued a fine and complete map of the Mesaba range. Something of this sort has long been needed, for the only correct maps were issued for private distribution only, by the Consolidated and Oliver companies. Mr. Silliman's map is down to date in the location of properties and it gives all of those that have come into prominence so far. It covers the range for 54 miles in length and for 15 miles in width, from east of the new Mesaba station mines to west of the Mesaba Chief. Many properties that have not yet been opened are on the list and given in exact location.

Menominee Range.

On the Menominee range the Oliver Company have taken the old Hope near Crystal Falls and the adjoining forties, and will explore at once. It is expected that the Hope may show a considerable body of ore. They have also been busy securing other options, among them the Hollister, which was in the hands of Oglebay, Norton & Co. last year, and on which some ore was shown. The old Forks exploration is showing some ore under a new operation. The Hope was in the hands of Corrigan, McKinney & Co., who are operating at Crystal Falls quite extensively. The story goes that this firm have been considering a proposition of selling out their entire mineral interests in the Lake region to the Morgan combination, but of this no information can be had hereabouts. It is not unlikely.

The Quinnesec is said to have an excellent showing of new ore and the mine will produce quite largely this year. This was one of the pioneer mines of the

range and was abandoned years ago as worthless. This ore is a nice medium rich Bessemer, and is desirable.

Two shafts have been opened at the Walpole, abandoned for some weeks, and the mine will be pushed this year.

The defeat of the River and Harbor bill stops all improvement of the harbor of Burlington Bay, for additional harbor facilities for the Duluth & Iron Range Road. This was one of the most meritorious and important of all the contemplated improvements under the act as it went to the Senate, though for a small sum of money.

Diamond drills are at work under the direction of E. F. Bradt for the American Mining Company at the Atikokan range exploration of the company. It is reported that the drills are finding the ore of the quality expected and that the road will be built to the property as soon as may be. Other western explorations on the Canadian side are not so promising.

The Marquette & Southeastern Road (Cleveland Cliffs Iron Company), have let the contract for a line from Marquette to a connection with the Munising Road, also owned by the company, a distance of about 20 miles. McDonnell Brothers of Grand Rapids, have the contract, and this week have put men on the ground. The line is to be completed the coming fall. Several steel bridges will be erected. The road will open the company's timber lands. In connection with this work the new 125-ton charcoal furnace at Marquette will go up at once, with sufficient retorts to make its fuel and save the by-products.

D. E. W.

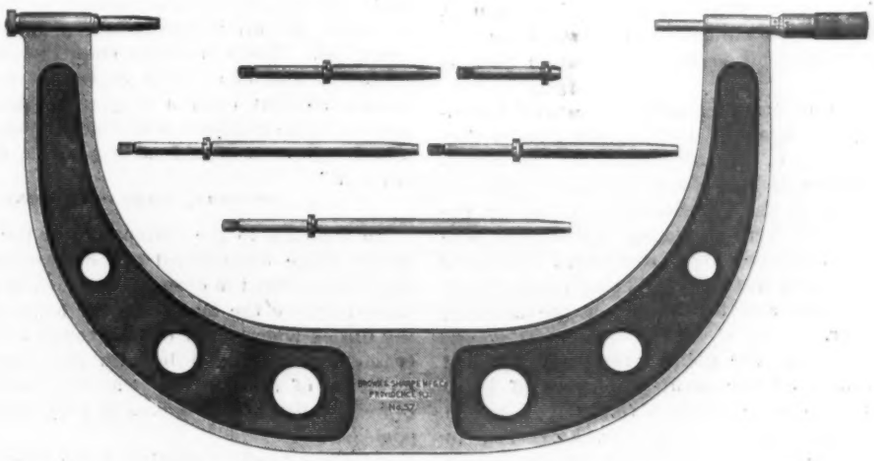
The Brown & Sharpe Micrometer Caliper.

A new micrometer caliper, designated No. 57, has been introduced by the Brown & Sharpe Mfg. Company of Providence, R. I. The frame is of T-section, the web being perforated to lighten the tool. All sizes, from 6 to 12 inches in length and 12 inches in diameter, may be measured by thousandths of an inch. Six anvils or measuring points are furnished which measure, respectively, 11 to 12 inches, 10 to 11 inches, 9 to 10 inches, 8 to 9 inches, 7 to 8 inches and 6 to 7 inches. Each anvil is provided with an adjustment for wear. They are easily inserted in the frame and are held securely in their bearings by a knurled nut. This caliper does away with the need of employing a full set to cover the range from 6 to 12 inches. It is accompanied by a set of standards for adjustment. These standards are of the same form as their standard end measuring rods with spherical ends, except that they are smaller in diameter.

The Foundry Supply Company of Philadelphia, with offices at 710 Drexel Building, offer for subscription at par $500,000 5 per cent. 30-year gold bonds, dated March 1, 1901, interest payable semiannually, March and September, in denomination $1000 each. "Payment of these bonds at maturity is guaranteed by $500,000 full paid 30 year endowment policies in the Provident Life & Trust Company of Philadelphia." Walter S. Wright is president of the Supply Company, which, it is stated, owns "in fee simple and under contract 640 acres of the finest sand, gravel and clay lands in America."

The Columbia Bridge Company.

We have already noted the fact in these columns that the Columbia Bridge Company of Pittsburgh would remove their works from Edenburg, Pa., near New Castle, to East Carnegie, on the Panhandle and Pittsburgh & Lake Erie Railroads, near Pittsburgh. The site of the new works contains 10 acres. The plans of the company are to build a new steel building 100 x 320 feet, which will contain hydraulic hoists, electric cranes and other machinery necessary for the operation of the plant. In a "leanto" addition to this building, which will be 200 feet long and 40 feet wide, will be located the boiler room, with a 225 horse-power tubular boiler and a horizontal engine, and an electric light plant for supplying light for all buildings. The operations of the company, which have been confined largely to bridge building, will be extended as soon as this building is completed, and they will do all kinds of structural work, such as mill building, turn tables, beam work, coal tipples, &c. In addition to this main building, the company will build a two-story brick office building, on the first floor of which will be located the general offices, and the second floor will be given up to the general drafting department, where a force of draftsmen will be employed. All will be completed by the middle of May. As soon as the new structures are ready 150 men will be given employment there. New switches and sidings in the yards of the new works have already been laid, and work on the new plant is being rushed as rapidly as possible. The officers of the Columbia Bridge Company are: Joseph Kountz, president; A. Kountz, vice-president; J. L. Kountz, assistant treasurer, and J. H. Barrett, secretary.



THE BROWN & SHARPE MICROMETER CALIPER NO. 57.

The American Tin Plate Mill, at Ellwood City, Pa., has received orders to start in full immediately after a shut down of almost a year. General Manager Banfield was in town in consultation with Superintendent U. S. Smiley last week. Shortly after his return to New York the news came to start the mill. When the good tidings arrived at 11 a. m. Friday bulletins were hung out and great excitement prevailed for a while. The news is hailed with great delight by all here, as it was thought the mill was shut down forever.

The Marshall & Huschart Machinery Company have removed their office in Cincinnati from 510 Johnson Building to 319 West Fourth street.

The Russian Tariff.

WASHINGTON, D. C., March 12, 1901.—The Secretary of State has advised the Secretary of the Treasury that the American Ambassador at St. Petersburg has been furnished with a copy of the Treasury Department's representations in opposition to the action of the Russian Government in levying retaliatory duties on certain lines of American products dutiable under the metal schedule, and that instructions have been given to urge with the greatest possible vigor the contention of the United States that the countervailing duty levied on sugar is not a discrimination against Russian commerce. The Secretary further expresses the hope that the Russian Government will speedily see the impropriety of treating as a discrimination the action of the United States, which has been taken with even greater promptness in the case of every other foreign nation paying a direct or indirect sugar bounty.

The Illinois Manufacturers' Association.

An incident of unusual interest in connection with the Russian tariff episode was the hearing given by Secretary Gage during the past week to representatives of the Illinois Manufacturers' Association, who filed a protest against the department's action, and characterized it as "an unjust discrimination against the manufacturing interests of the State of Illinois." Martin D. Madden, chairman of the committee, addressed the Secretary at some length, his statement being in part as follows:

"The popularity of Mr. McKinley among the American people four years ago was based on their belief that he was the exponent of the upbuilding of the manufacturing institutions of the country. Experience has shown the wisdom of the conclusions reached by the people. The mills that were previously idle were at once thrown open to the employment of labor, work was never easier to obtain, wages were never better, contentment never more universal, and the homes of the laboring man never happier.

"In the belief that the policy previously pursued would be continued, all the great employers of labor and the great mass of the laborers themselves, by an increased majority, again returned Mr. McKinley to the Presidency of the United States, and thereby placed the stamp of their approval on the policy of the past four years. It was but yesterday that he was inaugurated for his second term. Are we to understand that his policy is to be reversed? Shall we be kept in a state of doubt as to what we may expect from the administration, to which we have given our confidence? Are we to be experimented with in this way? If so, we are forced to believe that it will be the most costly experiment that has been tried in our country since the foundation of the Government.

"The constant employment of labor is essential to the prosperity of the nation. Constant employment of labor causes the free circulation of money. This free circulation of money enables the farmer to secure higher prices for his product. It enables him to pay higher prices to his labor, to secure greater comforts for his home, to be better satisfied with the Government; it increases his patriotism, it increases his desire to place in power the men who believe in and enforce policies which will continue the prosperity with which the nation has been favored for the past four years.

"It is our belief that the decision recently rendered by this department against the Russian Government will seriously affect all the great agricultural and manufacturing interests of the United States. In view of this belief we feel that we are not only justified in requesting a reversal of the decision rendered, but that we would be false to the interests of the country if we did not demand its immediate repeal."

Wm. C. Mundt of the McCormick Harvesting Machine Company made a short statement, in the course of which he declared that on a single item of that company's proposed shipment to Russia during the present year the proposed extra duty would amount to $8000. In conclusion he said:

"As we view the matter to-day, the duty of the Government is to recognize the manufacturing industries of this country. We believe the time has come when the best protection to the manufacturing interests is not the levying of countervailing duties and the promotion of tariff wars between nations, but in the gradual reduction and readjustment of our tariffs so as to encourage the export trade, which the manufacturers of this country are building up. With such encouragement we can hold our own with the manufacturers and products of any country in the world.

"You are undoubtedly aware, Mr. Secretary, that since you were called from Illinois to fill the high office you now occupy, vast sums have been expended in your State in enlarging its industries. This was done in the belief that they would be protected at Washington. The word 'protection,' however, as applied to them, means that we need the world for our market. We cannot keep these enlarged plants running continually or the labor constantly employed unless a liberal policy is pursued in our commercial dealing with Russia and other countries.

"A break in our trade with Russia and other countries, even for a short time, would practically destroy all that we have done to build up this trade, and would put us in a position where it would require many years and much expenditure of money to regain our present prestige. We are not protected by our patents in foreign countries. These foreign countries are great expert imitators and can easily reproduce our patented machines, so that even a temporary interruption of our present trade relations would be ruinous to our business, and I believe it would be impossible to ever again recover it."

Secretary Gage on the Issues.

In replying to the statements of the delegation, Secretary Gage emphasized the declaration he has made heretofore, that the executive branch of the Government cannot ignore the law as to the levying of countervailing duties wherever it can be found that a foreign government is paying a bounty, and suggested that the members of the delegation address themselves to their representatives in Congress if they desired the law repealed.

"I want to say," continued the Secretary, "that this department has been visited many times by people who said they represented the manufacturers' interests, and who expressed alarm at the possible consequence to their interests if Russia should adopt retaliatory measures. They make the same argument that you are making. They made no effort, however, to convince us that there is no bounty paid by Russia, directly or indirectly, or that there was no grant bestowed against which the statutes of the United States directly run, and which, if existing, compel the collection of a countervailing duty by the department.

"This department has also been visited by representatives of another branch of industry. They represented some thousands and thousands of farmers and agriculturists engaged in beet sugar raising, and some hundreds of millions, more or less, of capital invested in sugar mills. Neither did these persons do anything except to paint in lurid colors the disastrous consequences to their interests that would follow the finding of no bounty. Neither have they pointed out clearly and in convincing terms that there is a bounty or grant bestowed by Russia for the exportation of sugar. This department being a purely executive branch, has had no liberty in the premises and could not be affected by these collateral arguments. Neither side has tried to prove to us the facts or the law of the matter. They have all dealt in the same kind of considerations which you set forth.

"Now, the law made by the law makers, who represent the 300,000 people whom you assume to talk for, and who represent them absolutely and legally, under the law—that is, Congress (there can be no dispute about that)—have provided for exactly this kind of a contingency. Congress knew that an executive officer was liable to be prejudiced; Congress knew that as an exec-

utive officer he might not be absolutely familiar with the interpretation of the law; they knew that in the great scheme of customs laws there were many deeply involved questions, and that, without intending to injure anybody an administrative officer might touch upon the rights of some individual in administering the customs law. Therefore, in its wisdom, Congress, as representing all the people whom you stand for, provided a quick, economical avenue where appeals from decisions made by this department, that were thought by anybody, even the most humble individual, to be injurious to his interests, could be taken and heard.

"And this question in which you are so deeply interested can be taken promptly to a tribunal—the Board of General Appraisers. It is the place where the law contemplates it should go. The objurgations in which you indulge, the collateral considerations which you urge in the interests of our fellow citizens (whom we love just as much as you do), these considerations can have no weight in determining the matter of executive duty.

"This question was not lightly determined. It was determined in the manner that it was after a most careful study of the question. The opinion that there is a bounty, which this department has expressed, is shared in by other people—other nations I mean—that are also interested in this question.

"In 1898 there was a convention at Brussels called, and all countries that were bounty paying countries were invited to attend that conference or congress. Russia was represented there. Other bounty paying countries were represented also. Two of those represented in that congress—namely, Belgium and Austria-Hungary—expressed the deep conviction that there was a concealed bounty on Russian sugar.

"An importer of Russian sugar can now take an appeal, as I have said before, to the Board of Appraisers. If an importer does make such appeal it will be the duty and the pleasure of this department to facilitate in every way that it can the promptest kind of a hearing before that board."

Subsequently Secretary Gage asked Mr. Mundt as to the character of the shipments on which he estimated that $8000 additional duties would be assessed, and the reply being made that they were chiefly mowing machines, the Secretary rejoined that such machines were not included in the paragraphs of the Russian tariff on which the published increases have been levied; and, in fact, that agricultural implements of all kinds were specially excepted from the operation of the Russian order.

The Russian Tariff Rates.

In this connection the Treasury Department has been at some pains to procure an authentic translation of the Russian tariff, together with the administrative provisions relating to the metal schedule, and a careful examination of this data discloses clearly the basis of the error into which many manufacturers have fallen in assuming that their products are affected by the Russian decree adding 30 per cent. to the rates now levied upon American goods. The Russian edict increases the duties under Paragraphs 150, 151, 152 and 153, and Subdivision 2 of Paragraph 167. The popular impression is that all articles enumerated under Paragraph 167 are affected by the increased rates, but this is erroneous, as the duties levied by Subdivisions 1, 3, 4, 5 and 6 are not included in the decree. With a view to clearing up the misapprehension with regard to this feature of the decree, Paragraph 167 in its entirety, together with the administrative classification provided by the Russian tariff act, is reproduced in full, as follows:

(*Equivalents: Pood = 36 pounds; gold ruble = 77.2 cents.*)

167. Machinery, apparatus and models thereof, complete or in parts, adjusted or not, per pood:
  1. Of all kinds of copper or alloys of copper, as well as machinery and apparatus in which copper predominates in weight; dynamo-electric machines of all kinds $3.7056
     Conventional duty 3.335
  2. Gas and water meters; motors worked by gas, hot air, petroleum; dynamos; sewing and knitting machines; portable engines (with the exception of those mentioned in Sec. 5); tenders; fire engines (except those mentioned in Sec. 3); machines of all kinds not specially mentioned of cast iron, iron, or of steel, with or without parts of other materials 1.3124
     Conventional duty 1.0808
  3. Railway locomotives and traction engines; locomotives wagons (wagons-locomotives), steam wagonettes (wagonettes à vapeur), steam fire engines 1.544
     Conventional duty 1.3882
  4. Agricultural machinery and apparatus not provided with steam motors and not specially mentioned, also models thereof ..... .5404
     Conventional duty ..... .386
  5. Portable engines imported with thrashers of a complicated system, and steam plows ..... .386
     Conventional duty ..... .9264
  6. Reapers and binders; reapers with automatic stackers; steam plows; composite clover thrashers with two drums; composite steam thrashers with flail drums, not less than 4½ feet in width, and spindle drums of at least 40 inches in width; tedders, horse rakes, grass seed sifters; sifters with wire spiral cylinders; potato sorters; manure spreaders; pulverizers; bellows and injectors for vines and trees; grape pickers even with apparatus for separating the stalk; continuous grape pressers; centrifugal cream separators and parts thereof; all new invented or improved agricultural machines and implements, imported by experimenting establishments and museums ..... Free.

"Remark.—Parts of machines and apparatus, imported separately, are subject to the following duties: *a*. Those of copper or alloys of copper, 4.80 rubles gold per pood; *b*. Those of cast iron, iron or steel, 1.70 rubles gold per pood.

"Remark 2.—Extra parts of agricultural machines and implements imported therewith shall be admitted exempt from duty, when relating to machines and implements enumerated in section 6 of the present number, and at the rate of 50 copecks gold per pood, when relating to other agricultural machines and implements. A list of the aforesaid extra parts showing the number in the case of every machine or implement shall be established and published by the Minister of Finance jointly with the Minister of Agriculture and of the domains of the Empire. Modifications of this list shall be made in the same manner.

"Remark to the conventional tariff.—Parts of machines and apparatus imported separately, are subject to the following duties: *a*. Those of copper or alloys of copper, 4.32 rubles gold per pood; *b*. Those of cast iron, iron, or steel, 1.40 rubles gold per pood.

"Note.—The following are considered as dynamo-electric machines: 1. Those transforming a motive power into electricity and *vica versa;* 2. Those transforming an electric current of high tension into a current of lower tension and *vica versa* (transformers); 3. Those transforming continuous currents into alternate or intermittent currents and *vica versa*.

"Excavators, metallic ladders for fire extinguishing, and electric accumulators of all kinds, as well as their accessories, are likewise dutiable according to this number.

"Grain assorting machines of all kinds and winnowing machines, whatever be the number of cylinders, shall be dutiable according to section 4 of this number.

"The apparatus for feeding steam boilers with hot water, called 'economizer,' is dutiable according to the component material. Typewriters and apparatus for carbureting the atmosphere by means of volatile carburet of hydrogen, are comprised in No. 167. Locomotives without wheels, but with all other accessories, are classed in section 3. Divers' apparatus, including the boots when imported with the apparatus, are alike classed in No. 167. Mill rollers, consisting of porcelain cylinders permanently affixed to iron axles, are dutiable according to section 2, and rectificators of copper and iron, imported in detached parts, the copper predominating in weight, are comprised in section 1.

"Copper cylinders for machines for printing calico, &c., whether these cylinders be plain or furnished with designs, are comprised in letter *a* of the remark to the present number. Cards made of thick iron wire fastened to a board are dutiable according to letter *b* of the

remark to this number, and parts of dynamo-electric machines according to *a* or *b* of the same remark. Wooden cases for sewing machines are, when imported with the machines, dutiable according to No. 167 and according to the component material when imported separately. Water meters, whatever be the material of which composed, enumerated in No. 167, and railway trolleys, without steam motors, are classed in section 2.

"The following are included in section 4:

"I. Agricultural machines and implements used for: *a*. The cultivation and tilling of soil in fields, gardens and orchards; *b*. Sowing and planting tubers; *c*. Harvesting and ingathering products of the soil; *d*. Separating grain from the ear and for preparing grain for the market; *e*. The first preparation of vegetable fibers; *f*. The cultivation of trees and shrubs; *g*. The extraction of stumps.

"The following enumerated machines and implements must be classed in this catagory: Plows, cultivators, weeders, horse hoes, drill plows, cultivators, scarifiers, clod crushers, ridge plows, turf cutters, ditch hoes, horse rollers, manure spreaders, harrows, sewing machines, potato planters, harvesters, binders, mowers, tenders, hand and horse rakes, machine for harvesting and stacking hay, potato and beet root diggers, thrashing machines, feeding apparatus and elevators for thrashing machines, winnowing machines, sifting machines, millet mowers, inclined sieves for sorting linseed, machinery for cleaning and drying grain, machines for husking oats, straw shakers, rasps, clover harvesters, machines for topping flax, scutching or harling machines, machines and implements for sprinkling vines, fruit trees and shrubs; traps for harmful animals, and stump extractors of all kinds.

"II. Agricultural machines and implements used for: *a*. The preparation of fodder; *b*. Pressing hay, flax, hemp and other textile materials; *c*. Dairy purposes, and, generally, all those employed in agricultural industries.

"The following enumerated machines and implements are classed in this category: Gins, root cutters, chaff cutters, implements used for cooking cattle fodder, presses for hay and textile materials, butter separators, churns, oil mills, fruit driers, hand mills for crushing grain, beehives and other implements for agriculture.

"Locomobiles for complicated thrashing machines, with large hind wheels and transmission gear for the same, are dutiable according to section 5. Traction gear for animal power, imported separately from agricultural machines, are comprised in section 2."

Of the six subdivisions of Paragraph 167 above enumerated, only Subdivision 2 is affected by the Russian decree, and manufacturers whose products are specified under other subdivisions have no cause for apprehension in this connection.

American Direct Exports.

While the classification of American exports does not follow the form of the Russian tariff act, the Treasury Department has been able to make what is believed to be a fairly accurately estimate of the value of the annual shipments of articles subject to the new rates and upon which the duties will be increased 30 per cent. They are as follows:

Builders' hardware; iron and steel boiler work, tanks, articles of sheet iron or steel, forged nails, forged iron and steel	$152,273
Pipes, &c	60,078
Rough castings	28,407
Scales, all other manufactures of machinery	148,639
Steam engines	1,431,726
Metal working	124,589
Pumps, &c	186,104
Typewriters	170,730
Gas and water meters, dynamos, sewing machines, knitting machines, tenders, &c	531,440
Total	$2,872,429

The total shipments of American goods to Russia during the calendar year were valued at nearly $10,500,000, from which it appears that the decree affects a little more than 25 per cent. of our exports to that country.

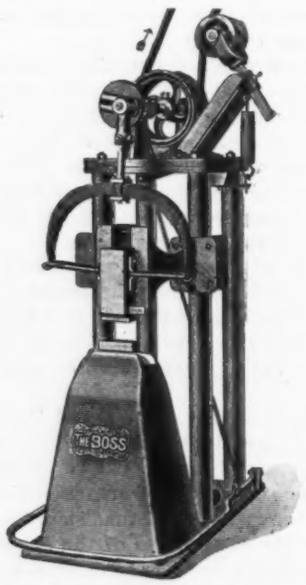
W. L. C.

Another Aluminum Solder.

The greatest obstacle to the extension of the use of aluminum by sheet metal workers and other mechanics has been the absence of an absolutely efficient solder that will stand all tests and yet be easy of application by the ordinary workman with the common tools used in applying any solder. This want the American Hardware Mfg. Company of Ottawa, Ia., claim to be able to fill in a new aluminum solder and flux which they are now ready to place on the market. By the use of this solder and flux, the inventors claim, aluminum can be soldered as quickly as any other metal with similar results to that given by the ordinary half and half solder. Any ordinary soldering iron, tinned with common solder, and using their solder and flux, will do the work.

The company give the following directions for the use of their preparation: "Care should be taken to scrape or file castings or sheet surfaces that are to be connected. Apply a light coating of flux and proceed as in the ordinary method with the iron or sweat solder. The aluminum solder will not flow like ordinary half and half solder, but will flow to some extent, care being taken to keep the iron hot. The solder and flux will not discolor the metal, but can be worked or polished the same as any other metal or alloy."

The company are making the solder and are prepared to furnish it in any quantity, large or small, full directions going with every stick. They will also be glad to furnish any information desired.



THE BOSS POWER HAMMER.

The Boss Power Hammer.

The new power hammer built by the Dubuque Machine Concern of Dubuque, Iowa, is so constructed that the dies are parallel with the machine, instead of diagonal. The tightener pulley is supported at both sides, thereby assuring uniform pressure on the belt. The shank of the frame carrying the tightener pulley is adjustable in its socket, so that the stretch of the belt may be taken up without altering the position of the foot lever. An adjustment has also been applied to the spring tension device operating the brake, the pressure of which on the drive pulley will stop the machine with the dies always separated.

Although the molders' strike in Cleveland was settled several weeks ago, the majority of the union men did not return to work until last Monday, when the contracts with nearly all of the imported non-union men expired. Eleven out of 19 shops have resumed operations with union men.

The Organization of Manufacturers.*

A Necessity to Obtain the Best Results from Organized Labor.

BY ANTONIO C. PESSANO PHILADELPHIA, PA.

Labor and Capital Defined.

The usefulness of an article is increased in proportion to the amount of labor bestowed upon it. The application of this labor to the article is industry. Industry is of three kinds: agricultural, when it is applied to the production of natural products; manufacturing, when it re-creates the products of nature and fits them for the uses of man, and commercial when it places within our reach articles of utility which we could not otherwise obtain. Whatever industry furnishes for the uses of man is entitled products, and these products are rarely the fruits of any particular branch of industry. Human industry, however great, when unassisted is insufficient to invest things with value. This brings us to the consideration of capital, which may be defined to be the value of the various articles employed in the production of a product. Capital is either productive or unproductive, fixed or circulating.

Whatever produces is productive capital; whatever is idle and useless is unproductive. Money, for instance, may be either, as likewise may be labor. If idle, labor is unproductive, but unlike money, labor is an animate body, and therefore in a state of idleness, either partially or entirely so, becomes dangerous and is a menace to society and good government. It must therefore be apparent to the student of political economy that the harmonious action of both capital and labor is an absolute necessity if the best interests of both are to be preserved. Labor is human action exerted to increase the value of whatever is susceptible of industry, and wherever it is employed is always productive, for labor which produces nothing is folly, and not likely to be attempted by any sane person.

Labor may be divided into two kinds—the labor of nature and the labor of capital, both of which are closely related and too often confounded; for tools or machines, which are actual capital, are mere expedients, the better to effect an object by means of natural resources. The object of tools and machines is to enlarge the power of production; that is, to enable one to do more than he otherwise could do unassisted by them. They consequently supplant human labor in one direction and create greater demands in another direction. The introduction of labor saving machinery is often the cause of an outcry from labor itself, and in years gone by improved machinery has been destroyed and its introduction has been met with violence and riot, and in many cases by the intervention of laws. Labor has learned that the world must progress, and no mob violence can controvert the law of progress. Labor has learned that, after all, machinery is productive of great good, for as a necessary consequence that which can be made cheaper can be sold cheaper, and is therefore capable of a wider circulation and thereby accrues "the greatest good to the greatest number." Thus labor receives the benefit. Besides, it is useless for labor to clamor against improvements or to throw obstructions in the way of the introduction of machinery which is designed to lessen costs; for if it were possible to prevent the use of improvements or machinery in any one section they would be employed elsewhere where a more liberal policy prevailed, and their products would be carried into other sections and bought, because of the quality and prices, in preference to those made by hand, and the labor in that section would naturally be the loser.

Labor is capable of infinite division, for it is rarely that we find all the requisites necessary for the performance of a task united in the same person. By dividing the labor and having each man perform that part which he is best fitted for either by nature or training, or both, the best results are attained by labor—greater perfection of detail, better quality, and maximum production, all of which results in a lessening of prices to the great masses of buyers, who, after all, represent the great army of laborers and mechanics. The higher the quality of any article and the less its cost the greater will be its circulation, and if it were not that this fact is carried out in every day practice there is no doubt that the great mass of wage earners would be short many of the comforts of travel, food, clothing, light, heat and shelter.

Productive capital, no matter how employed, and notwithstanding its frequent changes, is always the same. The employment of capital in the production of additional products is the proper and only way of increasing individual wealth, as well as of increasing the wealth of a community. But more products must always be created than have been consumed in their creation; otherwise there can be no saving, and as this saving or increase forms the groundwork of a perpetual annual profit, not only to the person saving, but to all whose industry is set in motion, it ought always to be practiced and encouraged, and indeed hailed as progression toward national prosperity.

Having set forth the ground plan, so to speak, upon which capital and labor are destined to work, I wish to proceed to the next step, and see how it is possible to harmonize these two great forces so that there may be a unity of action.

The Causes Leading to Organization of Labor.

I will assume, for the sake of argument, that labor has been dissatisfied with its condition in the industrial world. With the vast increase of industries devoted to all lines of manufacture, the rapid and wonderful growth of different enterprises has almost invariably absorbed the entire attention of the employers, and to within a recent period the employee had received very little consideration in a general way. The employers for the past half century—a period of time marking the world's greatest industrial triumphs—have been busy seeking how they could best outwit their competitors. They have been naturally antagonistic, although friendly to all outward appearances. This has in the past created a feeling of distrust and resentment that prevented any possibility of an organization of manufacturers having for its purpose a "unity of action" along well defined lines for mutual protection. During all these fifty odd years, while the manufacturers were drifting further and further apart, their employees have been gradually perfecting an organization to protect themselves and for mutual benefit. Their ideas of an organization were, no doubt, those entertained by the patriot who wrote "in union there is strength," believing that their combined interests would best serve to improve their condition; and upon this idea the great Iron Molders' Union of North America was started. A reference to its constitution states, "Believing that under the present social system there is a general tendency to deny the producer the full reward of his industry and skill," &c.

This preamble to the constitution of an important trade union is evidently built upon lack of faith in human fairness and justice, and is practically the key to "trade unionism." The student of human nature will no doubt have discovered long before this that there has been just cause for this assumption in many ways and at many times during the last half century which has just closed.

The high purposes of the Molders' Union in the earlier days of its existence, and for many years thereafter, were repeatedly defeated by the unwarranted action of its local members. The constant annoying demands and strikes, causing stoppage to business and consequent loss to the employers and distress to the molders and their families, impelled the stove founders of this country to take council together in the city of Cincinnati in 1886, as they were then smarting under the lash of the whip which had been so mercilessly applied by the local unions throughout the country that they had but one idea in common, and that was to form a "defense" association. Rules of government were drafted and thus was launched the ideal of what has since proven to be one of the greatest blessings to both employer and em-

*A paper read before the Foundrymen's Association of Philadelphia.

ployee in the great stove industries of this country. I believe that for 13 years no strike has occurred in the foundries of the stove trade who are members of the Stove Founders' Defense Association. Their relations with the national officers of the Iron Molders' Union of North America are of the pleasantest character; the officers of both organizations having the highest respect for the opinions of each other. While they do not always agree, they never disagree, but leave the mooted point to the mercy of time in the hope that as it mellows with age one side or the other will see the justice of the other's claim or that some common ground can be found upon which both will agree. Contrasting this with the former methods, and what, unfortunately, is too common practice to-day among trade unions generally, that of strikes and lockouts, the employer and employee whose relations are guarded by such a policy as the one described can certainly feel that they are blessed in having their interests protected and looked after by organizations whose objects are set forth clearly, so that each may know its principles and its necessities.

Thus we have a brief history of an organization of manufacturers for defense purposes in the iron industry, or in other words a "manufacturers' union." The benefits derived from such an organization have been so clearly proved that it is not necessary to take your time on that point, and I will pass on and describe to you the sister organization of foundrymen to the Stove Founders' Defense Association. I refer to the National Founders' Association. This association of foundrymen is only an infant in years; the child is just past three years of age, having been born January 26, 1898. While still a child in years it has proven itself to be possessed of gigantic strength, tremendous in its resources and supplied with a wonderful amount of tact and good judgment. It has ample money for all its requirements, its sponsors being very good to the child when it needed money to support it in carrying on a little unpleasant dispute up on Lake Erie with an older child of a contesting organization. This little spat between these children has continued for nearly eight months and has cost nearly $1,000,000, and finaly the older child has given up its unreasonable contention for such a big bite of the apple, and has promised to be good and not throw any more objectionable articles in the infant's back yard, and to stop tying tin cans on its dog's tail; also to allow the infant's washerwoman to use a clothes wringer if she wants to; in fact, to place no restrictions upon her, but let her have as many wringers as she requires in order to save time and labor. Now, altogether these children should get along finely and both be happy. I refer, of course, to the first, and I sincerely trust the last, conflict that will ever darken the paths of the National Founders' Association and the Iron Molders' Union of North America. Having measured the strength of the infant organization, the older one is more eminently fitted to appreciate its worth, and I am sure that every one of the conferees representing the National Founders' Association at the late Cleveland conference was deeply impressed with the honest and sincere motive that actuated the national officers of the Iron Molders' Union of North America. The general sentiment shared by all representatives on both sides was to the effect that "industrial wars" are a disgrace to civilization and are uncalled for in this enlightened age of progress, and strongly favoring a broader and wiser policy for the guidance of the members of the respective organizations, and to put these thoughts into practical form. The molders' representatives presented resolutions which were modified and crystallized into the following:

The Conference Resolution.

Whereas, The N. F. A. and the I. M. U. of N. A., through their duly accredited representatives, at a joint conference held in Detroit, Mich., June, 1900, each formulated a declaration of principles to which they still adhere, and which they have been unable to harmonize after careful consideration; and

Whereas, The consensus of enlightened opinion points to conciliatory methods and the principles of arbitration as the most desirable and equitable policy to be pursued when disputes arise between an employer and his employees; and as this is a policy to which both the N. F. A. and the I. M. U. of N. A. most heartily subscribe, they enter into an agreement, the one with the other, since known as the New York Agreement, by virtue of which their representatives have been enabled to meet and harmoniously discuss important matters affecting their mutual interests, and to endeavor to settle them in accord with the more enlightened and equitable policy referred to. And,

Whereas, These efforts have discovered the fact that wide differences of opinion, upon certain vital and essential principles, exist between the members of the N. F. A. and the I. M. U. of N. A., which their representatives have hitherto failed to harmoniz by the method provided in the New York Agreement, thus seriously endangering the high purpose to which they stand committed, and in one instance leading to a serious conflict between the members of the two associations in an important section of the joint jurisdiction; be it therefore

Resolved, That it is the earnest opinion of this Joint Conference Committee, composed of representatives of the N. F. A. and the I. M. U. of N. A., that agreement upon the essential points of difference can only be secured by the slow evolutionary processes begotten of friendly intercourse and the more intelligent understanding of mutual interests, which time and the influences of education alone can bring. And be it further

Resolved, That we hereby reaffirm our adherence to the New York Agreement, whose beneficent provisions we will continue to invoke, until by joint agreement we are enabled to reach a more defined code of conciliation and arbitration.

Resolved, That the resolutions just adopted are acceded to with the understanding that the several declarations of principles introduced at the conference held in Detroit, Mich., June 14 and 15, 1900 (taken in connection with the continuous existence of the New York Agreement, which provides that in the event of a dispute the matter shall, if necessary, be submitted to arbitration), are not to be construed as an absolute or positive code for the government of the conferees of either party who might be called together to decide a point of difference which involves any of the principles enunciated in the declarations referred to, but are simply definition of the views entertained by either party on certain important principles.

Resolved, That inasmuch as it appears from the spirit of the resolutions upon the minimum wage rate as applied to a molder presented respectively by the representatives of the N. F. A. and the I. M. U. of N. A. in this joint conference, and from the discussion which has just taken place upon them, that there is a disposition on each side to favor the establishment by joint agreement of equitable wage rates for different kinds of molding, applied so as to take cognizance of any molder's physical incapacity, and for a reasonable period of the inexperience or the mechanical inferiority of the apprentice who has just completed his apprenticeship, and elects to remain in the employ of the foundryman with whom he has completed said apprenticeship for a reasonable period that may be agreed upon, and in the establishment of wage rates in the different localities, to take into full consideration the conditions therein prevailing, it is the sense of this Joint Conference Committee, that hereafter in the adjustment of wage rates in dispute which may arise between the members of the two associations, both parties shall be guided by the spirit of this resolution; provided, however, that nothing in the foregoing shall be construed as compelling a molder to work for any foundryman at a rate of wages which he considers unsatisfactory; and further provided, that nothing in the foregoing shall be construed as compelling a foundryman to employ a molder at a rate of wages which he considers unsatisfactory.

And further provided, that nothing in the foregoing shall be construed as prohibiting piece work, which should at least be based upon the time work standard for the same work, so that the molder may not earn less than by the day.

And provided further, that nothing in this resolution

shall apply to operators of molding machines who have not learned the general trade of molding.

Explanatory Notes to the Above:

The word "incapacity" appearing after the word "physical" has in our opinion the same significance as the word "infirmity" if used in the same place. "Different kinds of molding," appearing after the words "favor the establishment by joint agreement of equitable wage rates for," is used with the understanding that in establishing a wage rate in any locality said rate need not of necessity be made general in its application to such subdivisions of the industry as, for example, a malleable iron foundry and a machine foundry, but that such subdivisions might properly be placed on a different basis as to wage rate.

These resolutions represent the advanced ideas of one of the best governed labor organizations in existence to-day. I am sure there is not a foundryman in all of our 400 members who does not have a higher respect for the Iron Molders' Union of North America to-day than he has ever had before. The great horror and distrust of the union has always been with the local unions taking upon themselves the authority to try and control the shops and management of the foundrymen. This is generally the outgrowth of bad local management, and is not countenanced by the national officers. So many troubles of this character have come up of late, and which are more or less attributed to the men who have recently been admitted to membership in the union, and who do not understand its purposes, that the official organ of the Iron Molders' Union of North America, in its February issue, warns its membership as follows: "Perfect discipline is indispensable to success; it cannot be won without it. There must be method in every movement and precision of action. These cannot be had without the exercise of the utmost self restraint. Impulsive action is often disastrous to our hopes as trade unionists. Let workingmen take pattern of organized capital, which is now pitting organization against organization in the industrial field. Their associations have money behind them, it is true, but that is not their only source of strength, for the business training of their members enables them to establish perfect discipline. They curb their impulses when it is necessary, and do not hesitate to be guided in their action by those whom they have chosen to lead them and formulate their policies. Mark it well, that gives them a decided advantage. Let us profit by their example."

The National Founders' Association is assured that there is no intention or desire on the part of the national officers of the Iron Molders' Union to permit unjust practices of any kind, and if such abuses are in practice, or attempted, they will be subject to investigation and removal. I believe many shop abuses are not altogether the fault of the employees, but are the result of incompetent foremen, the foremen lacking in the proper exercise of authority and judgment to keep discipline and be just to the employees at the same time, thus permitting practices to creep in that simply make the national officers of the Iron Molders' Union of North America stand aghast when they are brought face to face with them. On the other hand many unreasonable molders expect that their union will back them up in any demand they may make or in any breach of discipline in the shop in which they are working. This assumption on the molder's part makes him bold, and in less time than one can imagine he has the whole shop in an uproar, all because he thinks that is his privilege, because he is a union man. Such men do not understand the first principles of their trades unions, nor the wishes of their national officers, and unless they can be made to understand them, then the interests of the union would be best served by expelling such men. The local officers of a union have a great responsibility on their shoulders when they attempt to bolster up the bad element in their organizations. The organized labor of a high moral character and high skill will always receive a welcome and be eagerly sought for by employers, and if confidence is to be created between capital and labor, or more properly speaking, between employer and employee, it can only be along those lines. Some of the leading officers of the best labor organizations are thinking of having an association or union of organized labor of the highest character and skill. If this were done manufacturers would extend a glad welcome and it would be only a short time before the lower grades of men, both in morals and skill, would be either fitted for a higher sphere of usefulness or be driven into other channels where they more properly belong. It has been charged many times that some of the members of the National Founders' Association do not act in accordance with the policy of the association. If this be so, I can only surmise that it is a mistake and not intentional. I am sure no one who was present at the convention of the National Founders' Association, held in New York last November, could have obtained any idea that the National Founders' Association intended to wage a war of extermination against the Iron Molders' Union of North America. On the contrary, the central thought of the entire procedings was that of "harmony and peace," and how best to promote the mutual welfare of both employer and employee. One of the leading trade journals commenting on the proceedings of the convention expressed itself as follows:

"Division between capital and labor was deplored; the community of interest subsisting between employer and employee was emphasized. Nowhere in the discussions was any countenance given to the doctrine of right by might, or any suggestion of peace on a basis that left out justice. If the sowers of discord between capital and labor could have heard the sentiments expressed by the leaders in debate, they might have imbibed a new idea concerning the attitude of the average manufacturer toward his employees."

The best possible way to bring about these results is to abandon all attempts at abusing the minds of the employees with erroneous ideas as to the attitude of the National Founders' Association. If the employees learn to admire and respect its high purposes, then the employer and employee will come closer togetner and their mutual interests will be better protected. The National Founders' Association, through its new agreements has provided for the case of any employer who seeks to be unjust, and the Iron Molders' Union of North America has made ample provision to protect the employer if the employee is unfair or unjust. Now, as the two national organizations, the National Founders' Association, representing the combined interests of about 400 founders, having an invested capital of about $300,000,000 and employing about 30,000 molders, and the other, the Iron Molders' Union of North America, having a membership of about 35,000 molders, with a yearly income of about $400,000, have set up a high standard to which both associations have subscribed, and will bend every effort to perfect, it is only reasonable and just that all shortcomings should be treated in a broad and liberal way in the attempt of both organizations to perfect their respective details of operation. With these understandings before them the representatives of the National Founders' Association and the Iron Molders' Union of North America concluded their labors at the Cleveland conference, and one of the greatest industrial wars in the foundry trade of this country passed into history.

The Philadelphia Agreement.

As already stated, during the conference a national agrement was made touching on the application of the minimum wage, piece work, limitation of output, molding machines, &c. As Philadelphia and Baltimore had temporary agreements based on a national agreement being made, and on account of the illness of E. A. Moore, chairman of the third district, H. W. Hoyt, the able and efficient president of the National Founders' Association, appointed the vice-president of the association to take charge of conforming the temporary agreement made in Philadelphia last July to the terms of the national agreement. The result of the vice-president's work, in connection with Vice-President Frey of the Iron Molders' Union of North America, who had been sent here to attend to the matter, has already been placed before you, but I will read the agreement exactly as it was signed by both representatives.

PHILADELPHIA, March 4, 1901.

Agreement between the National Founders' Association (on behalf of its Philadelphia members), and the Iron Molders' Union of North America (on behalf of its Philadelphia members):

Article 1. In view of the fact that there has been an agreement entered into at the recent conference in Cleveland, Ohio, between representatives of both associations, on the question of equitable wage rates for molders, and in view of the mutual understanding that there is to be a further conference on the subject within a reasonable time—as may be agreed upon by the presidents of the respective associations—for the purpose of further perfecting the details regarding the regulation of wages of molders.

It is agreed that the temporary agreement, entered into July 16, 1900, shall be null and void, and that the agreement herein contained shall supersede the above mentioned temporary agreement.

Art. 2. The iron molders, members of the Philadelphia Union of the Iron Molders' Union of North America, agree to withdraw their demands that the foundrymen of Philadelphia should operate their foundries under the rules and regulations of the union.

Art. 3. In accordance with the national agreement, entered into at the recent conference in Cleveland, on the regulation of molders' wages, the foundrymen of Philadelphia who are members of the National Founders' Association, and the molders of Philadelphia who are members of the Iron Molders' Union of North America, agree to the following wage scale:

The standard minimum wage rate for bench and floor molders who have learned the general trade of molding shall be twenty-seven and one-half (27½) cents per hour, or sixteen dollars and fifty cents ($16.50) per week of sixty (60) hours, it being understood that when a molder has completed his work before regular shop closing time such time shall not be deducted in computing the week of sixty (60) hours.

Art. 4. The standard minimum wage rate shall be subject to the following differentials:

1. The young man who has completed his apprenticeship, and who, by reason of his mechanical inferiority or lack of experience, or both, in either branch of the trade of molding, shall be unfitted to receive the full wage rate provided for above, shall be free to make such arrangements as to wages with his employer for a period mutually satisfactory as may be agreeable to himself and employer.

2. The molder who, by reason of his physical incapacity or physical infirmity, cannot earn the standard minimum wage rate, is to be free to make such arrangements as to wages as may be mutually satisfactory to the employer and himself.

3. There being in some foundries a grade of work calling for less skill than is required by the ordinary molder, this grade of work being limited in quantity, it is agreed that nothing in this agreement shall be construed as prohibiting the foundrymen from employing a molder to make such work and paying for same at a rate that may be mutually agreed upon between the molder and the foundryman. It is understood that a molder who is working for and receiving a rate of wages of twenty-seven and one-half (27½) cents per hour or over, is not to be asked or expected to make the grade of work referred to above for any less wage rate than he is regularly entitled to under this agreement. This does not give the molder the right to refuse to make the work if it is offered him at his regular wage rate.

Art. 5. It is agreed that nothing in the foregoing shall be construed as prohibiting piece or premium work, and when it is desired on the part of the foundryman that his work shall be done under the piece work or premium system, it is agreed that the wages of the molder shall be based so that he may earn a wage not less than if working by the day. This is understood as applying to molders who are competent to do an equal amount of work and of equal quality to the average molder in the foundry in which he is employed.

Where the foundryman and molder cannot agree on the piece price for a certain piece of work, the foundryman is to have the work done by the day for a period of a day or more, according to the nature of the work, in order to establish a fair and equitable wage rate on the work in question.

It is further agreed that nothing in this agreement shall be construed as preventing a molder from agreeing with his employer on a piece price as soon as he is given a pattern.

Art. 6. Time and half time shall be paid for all overtime, excepting in cases of accident or causes beyond control consuming not more than thirty (30) minutes; and double time for Sundays and legal holidays—to wit: Fourth of July, Labor Day, Thanksgiving Day and Christmas. It being further understood that when foundries do not make a practice of running beyond bell or whistle time and are occasionally late, the "give and take" system shall apply in all such cases, it being further understood that both sides should show a spirit of fairness in adjusting matters of this kind.

Art. 7. Arbitrary limitations of output on the part of molders, or arbitrary demands for an excessive amount of output by the molders on the part of the foundryman, being contrary to the spirit of equity which should govern the relationship of employer and employee, all attempts in that direction by either party, the molder or foundryman, are to be viewed with disfavor and will not receive the support of either of the respective associations parties to this agreement.

It being further agreed that the wage rates specified herein are to be paid for a fair and honest day's work on the part of the molder and that in case of a molder feeling that a wrong has been done him by his employer, and that his treatment has been at variance with the terms of this agreement, he shall first endeavor to have the same corrected by a personal interview with his employer, and, failing in this, then he shall report same to the proper channel of his local union for its investigation. If there is any objectionable action on the part of the molder which is in conflict with this agreement, or the spirit thereof, then the employer is to endeavor to point out to the molder where he is wrong, and failing in this, he may discharge the man for breach of discipline, or else retain him in his service and submit the case to the National Founders' Association for investigation.

In order that there may be no misunderstanding as to the wages a molder is to receive under the above agreement, it is understood that a molder must agree with the employer on the rate of wages that he is to receive at the time he is engaged; it being further agreed that neither the molder nor the foundryman is to deviate from the terms of this agreement as to wages or deportment.

Art. 8. In conformity with the agreement adopted at the recent conference in the city of Cleveland, the National Founders' Association and the Iron Molders' Union of North America deprecate strikes and lockouts, and desire to discourage such drastic measures among the members of their respective associations.

It is therefore agreed that all unfair or unjust shop practices on the part of molders or foundrymen are to be viewed with disfavor by the Iron Molders' Union of North America and the National Founders' Association, and any attempt on the part of either party to this agreement to force any unfair or unjust practice upon the other is to be the subject of rigid investigation by the officers of the respective associations, and if upon careful investigation such charges are sustained against the party complained of, then said party is to be subject to discipline—according to the by-laws of the respective associations.

And it is further agreed that all disputes which cannot be settled amicably between the employer and molder shall be submitted to arbitration under the "New York Agreement."

Art. 9. When the words "employer" or "foundryman" are used, it is understood that their foremen or representatives may carry out the provisions of this agreement and act for them.

Art. 10. It is further agreed that nothing in the fore-

going shall be construed as applying to operators of molding machines who have not learned the general trade of molding, and the right of a foundryman to introduce or operate molding machines in his factory shall not be questioned.

Art. 11. This agreement shall continue in force to July 16, 1901, and thereafter to June 3, 1902, and to continue from year to year, from June 3, 1902, unless notice be given on May 1 of any year by either party to this agreement signifying their desire to change or modify the conditions of this agreement.

And it is further agreed that should any agreement be reached by a conference of representatives of the National Founders' Association and the Iron Molders' Union of North America upon the question of wage rates for molders, and in conflict with the terms of this agreement, that a conference of the parties hereto shall be called immediately to conform the terms of this agreement to those of the national agreement; otherwise this agreement is to continue in force as above provided.

The New York Agreement.

Copy of "New York Agreement," referred to in Article 8:

Whereas, The past experience of the members of the National Founders' Association and the Iron Molders' Union of North America justifies them in the opinion that any agreement entered into that will conduce to greater harmony of their relations as employers and employees will be to their mutual advantage; therefore,

Resolved, That this Committee of Conference indorse the principle of arbitration in the settlement of trade disputes, and recommend the same for adoption of the members of the National Founders' Association and the Iron Molders' Union of North America on the following lines:

That, in the event of a dispute arising between members of the respective organizations, a reasonable effort shall be made by the parties directly at interest to effect a satisfactory adjustment of the difficulty, failing to do which either party shall have the right to ask its reference to a Committee of Arbitration, which shall consist of the presidents of the National Founders' Association and the Iron Molders' Union of North America, or their representatives, and two other representatives from each association appointed by the respective presidents.

The finding of this Committee of Arbitration, by a majority vote, shall be considered final so far as the future action of the respective organizations is concerned.

Pending adjudication by this Committee of Arbitration there shall be no cessation of work at the instance of either party to the dispute.

The Committee of Arbitration shall meet within two weeks after reference of the dispute to them.

This agreement to go into effect Monday, March 4, 1901.

I will only add, in conclusion, that this agreement is a great credit to the Iron Molders' Union of North America, as representing an advanced position, and with the positive assurance of the national officers of the Iron Molders' Union of North America, in whom your executive officers have the greatest confidence, that the further classification of molders' wages will receive their best thought, and will be the subject for discussion at the next conference. We should, as employers, exercise every care in applying the provisions of this agreement, and use every possible effort to avoid clashing and friction with our employees. Much will depend on the good judgment and care exercised by your foremen in putting this agreement into effect. Under its provisions if a molder feels that he is not being treated fair he is to endeavor to have his trouble adjusted by a personal interview with his employer or foreman. If the proper spirit is shown on both sides I cannot see why harmony should not prevail in every foundry in this city, thus demonstrating to the civilized world the possibility of capital and labor working harmoniously together.

A commercial exposition building, to cost $500,000, is to be erected on the land owned by the Garrett Biblical Institute, on Indiana avenue, between Thirteenth and Fourteenth streets, Chicago. It will be built by the Manufacturers' Exhibition Company, who were recently incorporated, and who have arranged for a 30 years' lease of the ground and an option for an additional tenancy.

Great Britain's Imports of Machinery.

The Commissioners of Customs have issued statistics for the first time showing the source of "iron and steel machinery," except cycles and sewing machines, imported into and re-exported from the United Kingdom during the years 1898, 1899 and 1900:

Imports of Machinery into Great Britain.

Countries whence imported.	1898.	1899.	1900.
Russia	£2,379	£7,649	£7,753
Sweden	47,029	77,321	115,418
Norway	1,316	4,420	7,976
Denmark	27,293	18,669	29,557
Germany	213,923	248,198	280,780
Holland	82,441	118,698	123,871
Belgium	120,933	132,797	199,113
France	191,222	153,871	153,618
Italy	855	2,268	547
Austria-Hungary	2,992	1,492	589
Australasia	1,511	1,160	740
Canada	34,272	24,809	10,825
United States	2,017,386	2,609,367	2,261,624
Other countries	2,332	4,542	4,339
Totals	£2,745,884	£3,405,261	£3,196,750

These figures show that the United States is by far the leader in this movement.

It appears that there were re-exported during 1898 £561,742, during 1899 £563,900 and during 1900 £530,160, so that the transit trade is quite large. The destination of the principal re-exports is given in the following table, a multitude of small countries being omitted:

Re-Exports of Foreign Machinery.

Countries to which exported.	1898.	1899.	1900.
Russia, North	£211,878	£194,924	£117,479
Russia, South	19,830	18,592	21,615
Sweden	57,079	52,466	41,704
Norway	18,662	13,294	9,737
Denmark	16,659	9,059	8,270
Germany	39,506	36,895	23,187
Holland	23,493	28,613	12,665
Belgium	15,248	23,768	11,386
France	10,859	21,260	23,208
Spain	19,544	11,007	28,065
Italy	3,961	2,523	5,184
Austria-Hungary	3,520	743	4,140
United States	22,592	35,207	36,415
Gold Coast	142	360	5,504
Cape of Good Hope	8,627	9,333	5,381
Natal	2,774	1,704	4,070
Bombay	3,007	4,011	3,771
Madras	1,919	1,984	5,264
Bengal	2,133	3,138	7,163
Burmah	830	1,906	2,439
Straits Settlements	1,791	1,992	2,801
Ceylon	1,211	11,171	2,917
West Australia	15,517	20,003	17,415
South Australia	1,899	2,335	4,892
Victoria	3,555	2,609	30,284
New South Wales	20,436	10,990	33,317
Queensland	2,116	1,157	3,461
Tasmania	2,033	....	236
New Zealand	5,684	3,819	10,327
Canada, Atlantic	3,053	864	799

Of course, it is impossible to trace the machinery produced in this country, but it is undoubtedly a fact that a very large share of it all originated in this country. This is probably true particularly of the shipments to the Australasian colonies.

The German Wire Industry.—Some interesting figures have found their way into print with reference to the operations of the German Wire Nail Syndicate. It appears that the associated makers sold the second half of 1900, 22,307 tons in Germany and 19,525 tons for export. The profits on the former were $285,000, while the export orders netted a loss of $206,000. The volume of business done is certainly very small.

Vice-president T. H. Wickes of the Pullman Company denies that efforts are being made by that corporation to purchase the International Sleeping Car Company of Europe.

The Iron Age

New York, Thursday, March 14, 1901.

DAVID WILLIAMS COMPANY, - - - - - - PUBLISHERS.
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GEO. W. COPE, - - - - - - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - - - - - - HARDWARE EDITOR.
JOHN S. KING, - - - - - - - - BUSINESS MANAGER.

What Are Normal Prices for Steel?

What may be termed the normal price of a manufactured commodity, which is independent for its raw materials of weather conditions and crops, is that at which an adequate supply becomes available at a sufficient profit to provide for renewal and improvement of plant, for exhaustion of mineral property, for wages high enough to command regularly the necessary labor, and for a fair return to capital for risks involved. In the staple industries, so far as they are not controlled by monopoly of raw material, or by patent rights, any prolonged excess price above the normal leads to undue competition, although the latter may sometimes develop slowly.

As an example we may cite the copper mining industry, where an exceedingly rapid development in the demand has for a long time kept values far above what might be termed the normal level. There is not a single important producer in this country, for instance, which cannot pay ample profit to its owners at about 12 cents per pound, marketed. Before the electrical development caused the demands of the world to rush upward, the price now ruling was artificially maintained for a relatively brief period by the Secretan syndicate. This caused such a restriction of the requirements and such a rush of metal to market that the resources of a great French bank melted away with incredible swiftness.

We know from only too recent experience that a level of iron and steel prices as high as that of our latest boom yields enormous profits for a short period, but, too, cuts off consumption very suddenly. We know that a safe level of values must be somewhere between the starvation prices of 1893-1898 and the record figures of 1899-1900.

Of course, conditions have changed to some extent. In former years the consumer was forced to pay a profit to the producer at every step along the line. The blast furnace operator must remunerate the ore miner and the coke producer, the steel maker in turn must pay an advance on the cost of making pig iron, and the rolling mill, turning out the finished product, must accord a profit to the billet mill. Under the new conditions all these intermediate profits are supposed to accumulate as a final fixed charge on the finished product, the total being assumed to be less than the aggregate of the individual figures. That aggregate, while really less, may appear very high, from the very fact that it embraces the net yields of all the intermediate operations.

We have had times when practically all the profits along the whole line have been squeezed out, when Bessemer pig sold down to $9.25, when steel billets sold down to $13.50 at steel works. We know that bars and plates have sold in large quantities, over considerable periods, down to 85 to 90 cents per hundred pounds, that $2.75 was shaded for tin plates, that wire rods sold as low as $20 at works, that beams were marketed as low as 1.10 cents per pound, and that steel rails were contracted for at figures netting only $16 at mill.

With the control of raw materials, of transportation, and with the elimination of all intermediate profits and charges, these figures are but little above the actual cost of well located, well equipped and well managed plants. A total gross charge of $5 to $7 per gross ton on finished product on a fair volume of business should cover reasonable fixed charges amply, and thus selling prices are reached which certainly are low enough to encourage a large domestic consumption and leave excellent margin for export opportunities. In other words, with a good tonnage of requirements, such amounts as are needed to pay interest on bonded debt and returns on preferred stock of a concern like the United States Steel Corporation could be carried and yet keep prices at a low level. In fact, they could be kept below the normal level, if there be any justice in the claim that consolidation brings with it important economies, a fact which few who are well advised will care to dispute.

Commercial Organizations Showing Their Power.

The effects of the organization of retail merchants in various lines of trade are beginning to crop out. A bill has been introduced in the Minnesota Legislature to prevent the boycotting by retail associations of wholesale concerns that sell to consumers. It is assumed in some quarters that this bill has been introduced at the instigation of the lumber interests. The retail lumber dealers have formed a very effective organization in the Northwest, and they have for some time been making those lumber companies uncomfortable who persist in selling to consumers, while at the same time soliciting the patronage of the regular trade. The Northwestern retail dealers in agricultural implements are also strongly organized, and it may be possible that the bill has some backing from implement manufacturers who are endeavoring to cultivate relations with consumers as well as merchants. Again, the retail hardware dealers are becoming pretty thoroughly organized, and some wholesale hardware interests may be invoking the protective influence of the law to shield them from the result of attempting to undermine the trade of their own customers. It is certain, however, no matter what interest may have prompted the introduction of this bill, that it is due to the spur applied by the organization of retail merchants. The power of such organizations is now being felt, or the enactment of special laws would not be sought as in the case of Minnesota. It is the best kind of a recommendation for the retail associations, and will very probably stimulate them to increased activity in building up their organizations.

It would be utterly ridiculous for a law of this kind to be passed by either Minnesota or any other State, as it could never be enforced. Severe penalties might be prescribed for boycotting, but it is safe to say that they could not be enforced. Special legislation very rarely accomplishes the purpose for which it is intended. It would permit a wholesaler or a manufacturer to sell to whom he chooses, but would not permit a retailer to buy from whom he chose. Freedom of action must be given to the latter as well as the former. If it happens that any considerable number of the latter feel that their interests have been injured by the policy of the former, it will be very difficult, if not impossible, for them to be prevented from acting in harmony with one another and transferring their patronage to quarters in which their interests will be subserved. Wholesalers or manufacturers cannot justifiably blame them for such action, as it is simply defensive, being forced by aggressions on

their own trade. The retail merchants have rights which should be respected, and those wholesalers or manufacturers who do not recognize such rights should not expect to receive their patronage. To resort to the authority of the law is to adopt a very poor substitute for a straightforward commercial policy.

The National Finances.

In the past decade the population of the United States increased something over 21 per cent., the aggregate wealth of the United States, according to preliminary estimates, increased something over 38 per cent. and the expenses of the United States Government increased 64 per cent. But there is one rather interesting indication that the increase in expenditure, vast as it is, does not exceed the growth of business and the tax paying power of the people. The increase in the revenues of the postal service, paid by the people who used the mails, and in proportion as they used them, increased 68 per cent. The increased expenditure on the postal service, a small percentage of which was met out of the general receipts, was $42,000,000; the increased expenditure for pensions, mostly the result of the "dependent pension law" of 1890, was $34,000,000; the increase of the civil and miscellaneous expenditures of the Government was $24,000,000, or 32 per cent. There was an increase of nearly $4,000,000 in the payments on account of the Indians, but this is an item which can never increase very much. There was an increase of $4,000,000 in interest, since largely reduced by the refunding operations, and then there were the large increases on account of the army and navy growing out of the Spanish war. The expenditures of the War Department increased $90,000,000, but this includes river and harbor expenditures, and the naval expenditures increased $34,000,000, and will be considerably larger next year. The two sessions of the late Congress appropriated $143,000,000 for the navy, against only $104,000,000 appropriated at both sessions of the previous Congress. Probably most of this increase would have occurred without any Spanish war. The new fleet was begun 20 years ago. Wooden vessels were replaced by steel, and then the steel vessels were increased in number by both political parties and in the absence of any signs of war.

The public has been well advised that the late Congress appropriated a billion and a half, though ten years ago a Congress that spent a billion dollars achieved a good deal of notoriety thereby. This total includes expenditures for the postal service, which are ten millions more than in the current year and nearly double what they were ten years ago. It includes over $50,000,000 a year for the sinking fund, which is a reduction of the bonded debt, the redemption of which was suspended during the years of depression and small revenues. The appropriations for the army for the coming year are scarcely as large as they were in 1900, omitting the river and harbor expenses. The naval expenditure has gone up 60 per cent. in two years, but a great part of this is due to the construction of new ships, and in a few years the increase of the navy will cease and there will only be enough construction to replace losses and decay. The military expenditures will be reduced when the army can be reduced and the expense of the Philippine garrisons met from the insular revenues.

In two-thirds of the current fiscal year the surplus revenue amounts to only $33,000,000, but the surplus is likely to be much larger in the last part than in the first part of the year. In eight months of last year the surplus was less than $38,000,000, but for 12 months it was very close to $79,000,000.

At the end of last week the Treasury contained $150,000,000 of gold for the redemption of legal tender notes, $760,996,989 of gold and silver against gold and silver certificates and Treasury notes, and in the general fund it contained $151,040,079 over and above the amount needed to meet the redemption claims of national banks, outstanding checks and drafts and disbursing officers' balances, all, in fact, that could be comprised under the head of a working balance for the Treasury. Therefore, even if a deficit should occur in the revenues, it might continue some time without causing the slightest inconvenience, and the redemption of the notes being secured by the reserve fund, their value could not be endangered even if there were a deficiency in the general fund.

It seems probable that the depression abroad in all industrial branches will have the effect to again stimulate emigration to this country of the better class of mechanics. Employment on the Continent, and to some extent in Great Britain, is falling off, while the reports which come from this side of the water are, of course, encouraging. In all the industrial States labor, particularly of the higher ranks, is quite well informed as to conditions in this country. The idea that dollars may be picked up in the streets is pretty well dispelled, so that those who come to try their fortunes in this country expect less and realize more. Such immigrants, usually the most intelligent and progressive, add to our industrial power.

James H. Baker Mfg. Company.

The James H. Baker Mfg. Company, Park Building, Pittsburgh, with works at Tarentum, Pa., have made some extensive additions to their works and have installed a large amount of new equipment. Included in this are eight hammers, a blower, two single and two double punching presses. The firm have also added more boiler capacity and installed another engine. Among the hammers are two 1500-pound steam drop hammers, furnished by Bement, Miles & Co. of Philadelphia, and two 1000-pound steam drop hammers from the Chambersburg Engineering Company, Chambersburg, Pa. The addition of these hammers adds very materially to the capacity of the James H. Baker Mfg. Company for making drop forgings. The firm have been very busy and have been running 22 hours per day since the latter part of last year. Their trade in railroad forgings and coil chain is very heavy, their wagon business is good, while their department on special work is running to full capacity. The James H. Baker Mfg. Company are makers of car irons, wagon hardware, air brake forgings, drop forging and pressing, and special work of all kinds. The capacity of their works at Tarentum has been increased several times over since originally started. The officials of the company are H. M. Brackenridge, president; James H. Baker, vice-president and general manager, and O. C. Camp, secretary and treasurer.

The new steamer building for the White Star Line at Harland & Wolff's yards, Belfast, Ireland, and shortly to be launched, will be the first vessel ever constructed with a measurement of over 20,000 tons. The new vessel has a length of 700 feet and a breadth of 75 feet. She will thus be 8 feet wider than the "Oceanic" and the "Deutschland," at present the two largest vessels afloat, and 6 feet more in breadth than the new "Kaiser Wilhelm II," which is building at Stettin for the North German Lloyd Line. Her length, however, will be 52 feet less than that of the "Kaiser" and 4 feet less than the "Oceanic," at present the longest seagoing vessel. The "Kaiser Wilhelm II" will have a measurement of 19,500 tons.

The American Radiator Company.

President Joseph Bond of the American Radiator Company on March 6 submitted a statement to stockholders assembled in annual meeting at Jersey City which showed earnings for the fiscal year ended January 31 equal to 6.47 per cent., against 8.1 per cent. for the previous year. The statement showed the same amount—$100,000—charged to depreciation, but $59,248 less expended in additions. The comparison with 1900 is fully as good as that which can be made by other companies allied with the iron and steel industry, and in considering it the fact should be borne in mind that the American Radiator Company felt severe effects of the labor troubles, which practically caused a cessation of building last year. The assurance that building will be successfully done on a great scale this year promises well for the next annual report. Considering all trade and labor conditions the report given out yesterday must be regarded as good. Profits and the disposition of them is shown by the following:

	1900.	1901.	Totals.
Net profits	$657,161	$527,997	$2,185,159
Preferred dividends	*157,500	†210,000	367,500
Balance	$499,661	$317,997	$817,659

*Three dividends. †Four dividends.

The company's balance sheet as of January 31 is as follows:

Assets.

	1900.	1901.
Plant account	$6,499,811	$6,502,395
Additions during year	192,583	133,335
Totals	$6,692,395	$6,725,730
Less depreciation	100,000	100,000
Net	$6,592,395	$6,625,730
Quick assets	1,991,751	2,276,234
Totals	$8,584,146	$8,901,964

Liabilities.

Preferred stock	$3,000,000	$3,000,000
Common stock	4,893,000	4,893,000
Total stock	$7,893,000	$7,893,000
Accounts payable	191,484	191,305
Total liabilities	$8,084,484	$8,084,305
Balance	499,661	817,659

Net quick assets show an increase of $284,000, as follows:

	1900.	1901.
Total quick assets	$1,991,751	$2,276,234
Less all accounts payable	191,484	191,305
Net quick assets	$1,800,266	$2,084,928

President Bond in his address to stockholders had this to say:

"Increasing the volume of output and diminishing the percentage of margin both prompt and necessitate the progress in manufacture which is essential not only to the best interests of our company, but also to our patrons and to this line of industry.

"Special attention has been given during the past year to the perfection of our plants, to the introduction of important improvements of equipment, to the utilization of better progress, thereby increasing the productive capacity, reducing costs and improving the quality of product.

"The comparison from month to month of the results of our several plants is valuable instruction, as it leads to early correction of any existing defects and stimulates progress.

"The year has been a natural successor to the abnormal season of 1899. Prices for raw materials and finished products have been declining, and the amount of building throughout the country has been about 30 per cent. less than for the previous year.

"Lower prices ordinarily stimulate consumption, but while prices are declining as during the past year the demand is checked by the postponement of purchases and the delay of building enterprises. Notwithstanding, however, the influences mentioned our policy of sharing with our patrons the savings from the larger method of manufacturing, the economies of selling and distribution has resulted in our securing a compensating volume of business and net results satisfactorily in keeping with the conditions which have prevailed."

The stockholders elected the following directors for the coming year: John B. Pierce, Buffalo; Edward A. Sumner, Clarence Carpenter, Ralph M. Dyar, Walter S. Russell and Henry Bond, Detroit; John Fertig and John M. McKinney, Titusville; George W. Parker, St. Louis; Joseph Bond, Clarence M. Woolley, Charles H. Hodges, Frank O. Lowden and W. T. Baker, Chicago, and William Hill, East Orange. The officers are: President, Joseph Bond; first vice-president, John B. Pierce; second vice-president, Edward A. Sumner; secretary, Clarence W. Woolley; treasurer, Charles H. Hodges.

The Trade Position in Scotland.

GLASGOW, March 1, 1901.—Naturally the report that the great steel combine in America is at length completed has excited great interest and some uneasiness in our iron and steel circles. The news has had no effect on prices, either in pig iron or in finished material, for it is recognized that any effect the combine can have on our trade cannot be immediate. Opinions are divided as to what that effect may be. We are dealing with an unknown quantity, and no one can possibly foretell the consequences of the great deal successfully engineered by Mr. Morgan. But here one section of the trade is disposed to regard the affair with foreboding, on the ground that to keep control in the United States the combine will have to increase its output and to keep all plants continuously at full work so as to minimize standing charges—what in Scotland is called "oncost." It is argued by this section that the combine will keep up prices at home by securing the control, but that in maintaining the control a vast quantity of stuff will have to be manufactured which cannot be absorbed in the United States, and which will be sold for what it will bring in Europe, preferably in Britain. Another section of the trade, however, scouts the idea of a body of American capitalists going on manufacturing more than they can place at a profit. They say the Morgans and Rockefellers are not going into this business to lose money for the pleasure of ruining British steel makers and giving British consumers a continuous supply of steel goods below cost. They rather incline to the opinion that the combine may result in a reduction of the output in America, certainly in the prevention of too hasty increase, to the great benefit of British producers.

All this, of course, is mere matter of speculation, and *The Iron Age* must have a better idea than we can form here of the design and probable policy of the combine. But besides the two views I have indicated, there is also a strong disposition on this side to think that the very gigantic proportions of the combine will so arouse public feeling and economic alarm in the United States as to set in motion a current that will not cease until it has swept the whole system of trusts and combines out of existence.

The most successful and profitable operation of the kind ever attempted in Great Britain—to wit, the thread combine—originated and is engineered in Glasgow. But this is not a monopoly of manufacture and its dealings are in one commodity alone, not an infinite variety of products like those of the steel combine. And again, employers of labor here, scarred with the fights of many a labor war, are wondering how this deal will affect the relations between capital and labor in America. Some there are who predict that the combine will give such an impetus to labor organizations that the troubles we have passed through in this country are as nothing to the industrial warfare before America. However this may be, we ought not to holloa, for we are not yet out of the wood. Personally, I fear that we shall not get over this initial year of a new century without one or two of the severest labor struggles we have yet experienced.

Not for a long time has American iron and steel been so little in evidence in our markets as while these possibilities of the future are being discussed. American material is coming in on contract, but no new transactions are being effected either in pigs, billets or manufactured steel. And we hear similar reports from the

English centers. Indeed, it would seem as if American makers had last year sold for export more than they could really spare. For deliveries are coming forward much behind time, and in several cases the sellers have bought back at a sacrifice in preference to delivering. One contract is mentioned for 10,000 tons of steel ship plates for delivery last year. Up till now only 1000 tons have arrived, and it seems doubtful if any more will come. Again, the other day a parcel of 2000 tons of pig iron came in so far behind time that (the market being away back) the buyer refused it. These 2000 tons American pigs are now in Connal & Co.'s famous warrant stores, waiting for a purchaser. This, I suppose, is the first instance in the history of American pig iron being placed in the public stores of this country. I fancy the Anglo-American iron trade has not worked very satisfactorily for either party at any of the centers. Each was unused to the other's ways and each trod on the other's toes. Then the American terms of cash against bills of lading are not in agreeable contrast with the customary terms here.

There is a better feeling in our markets, and rather more demand for finished iron. But it does not amount to very much and does not mean any more than that a few consumers have been encouraged by the low prices to replenish their stocks, which had been allowed to run bare. At any rate the evidences are not apparent of any new demand, or of any special revival in any branch of business. The margin for makers must still be very small, even though pig iron and coal are both down.

The outlook in our great shipbuilding industry is not brilliant just now, whatever the future may have in store. As has been stated already the shipbuilders are well enough supplied with contracts to keep them pretty well employed during this year, but they are not booking any new contracts worth speaking about. One hears plenty of big negotiations in progress, but somehow they don't seem to materialize—as yet, at any rate. In February Sotch shipbuilders put into the water upward of 60,000 tons of new shipping, but they did not book more than 3000 tons of new contracts. The disproportion is too large to be pleasant—too suggestive of bare poles in the yards in the not very dim and distant future. Still it is an undoubted fact that many ship owners are only biding their time, and waiting for the psychological movement to place their orders. Not only have the regular lines to be replenished, but owners of fleets of cargo "tramps" have sold their old craft so freely (and so profitably) to foreigners that they must needs build afresh very soon. The depression in the freight markets and the general uncertainty of the business outlook is keeping back their orders. But they will come.

The coal situation is a little more promising. When I wrote at the end of January the Board of Conciliation, composed of representatives of the coal owners and of the miners' trade unions, were considering an application to employees for a reduction in wages of 1 shilling per day. This demand was resisted by the men—argumentatively, not forcibly—and by clever manœuvering they have managed to spin out the negotiations until to-day. By this means they have secured a full month longer, at the maximum wage of 8 shillings per day, than the coal owners had any intention at the outset of giving. The advantage thus gained by the men is computed at £75,000. To-day, moreover, the Board had to decide one way or the other, and in the meantime the union leaders have passed the word round the colliery districts that it is better to accept the reduction proposed than to fight just now. Therefore the wage will be reduced to 7 shillings per day, with an understanding that it is not to be altered again before April 30 at soonest.

Meanwhile, prices of coal have been reduced all around, until the average is now about 6 shillings per ton under the average of February 1900, and about 8 shillings per ton under the highest prices marked last year. Nevertheless, the export trade has fallen away exceedingly, and is falling because the price of shipping coal f.o.b. the Scotch ports is just about the same as the prices of Newcastle coal f.o.b. North of England ports—and Newcastle coal is usually accounted worth 1 shilling 6 pence to 2 shillings more than Scotch in the foreign markets. In consequence of this dropping away of the export demand there will be more Scotch coal to be marketed at home, and therefore home consumers confidently reckon on even cheaper prices as the season advances. The price of splint coal for the blast furnaces has this week been reduced another shilling (making 6 shillings down from the top), and it is now 9 shillings per ton. This last reduction in coal is equal to 2 shillings 6 pence per ton saving in the cost of each ton of pig iron produced, and as the demand for pigs is far from active we may see another downward move in iron. B. T.

PERSONAL.

Paul McCaslin, night superintendent of the American Steel Hoop Company's mills at Youngstown, Ohio, has been appointed general manager of the mills recently acquired by the company at Atlanta, Ind.

After March 1 the offices of Walter Kennedy, engineer, will be removed from 631 Penn avenue, to rooms 711, 713 and 715 Bijou Building, 611 Penn avenue, Pittsburgh, where he will be better able to continue the busines of mechanical engineering, particularly that of economic blast furnace construction.

C. A. Sercomb, who has for many years been prominent in the Western foundry trade, having been president of the Western Foundrymen's Association, has sold his interest in the firm of Schwab & Sercomb at Milwaukee, Wis., and will make a tour of Mexico with his wife to enjoy a season of much needed relief from business cares.

J. C. Birge, president St. Louis Shovel Company, St. Louis, who sailed from New York February 14, on the "Fuerst Bismarck," accompanied by his wife and daughter, is now in Egypt enjoying a trip up the Nile. He expects to return about June 15.

Alfred Clifford, former chairman of the board, American Steel & Wire Company, has again taken up his residence in St. Louis.

B. S. Adams, St. Louis district sales agent of the Republic Iron & Steel Company, accompanied his family to Florida, where he will make a brief stay.

John M. Watson, the veteran foundryman of New Castle, who is superintendent of the Pennsylvania Engineering Works at that city, sustained a fracture of the arm a few days ago by falling on an icy sidewalk near his home.

J. E. Stead of Middlesbrough, England, has been awarded the Bessemer gold medal by the council of the Iron and Steel Institute.

Col. L. W. Johns, who is retiring from the superintendency of the mines of the Republic Iron & Steel Company, in the Birmingham, Ala., district, was presented with a life size painting of himself by the employees, who have served under him at Sayretown and Warner, Ala.

Burnham, Williams & Co., proprietors of the Baldwin Locomotive Works, Philadelphia, have donated $25,000 toward the new engineering building of the University of Pennsylvania.

E. L. Rippell, treasurer and general manager of the Buffalo Foundry Company, of Buffalo, N. Y., who has been seriously ill with typhoid fever, is now convalescent.

Four more cities are reported as beneficiaries of Andrew Carnegie's liberality in promises of library buildings upon the usual conditions that the cities shall provide sites and maintain the libraries by fixed annual appropriations. These cities are Springfield, Ill., $75,000; Davenport, Iowa, $75,000, and Lincoln, Ill., and Sheboygan, Wis., $25,000 each.

Henry C. Frick, Pittsburgh, has given $5000 to the Mercy Hospital of that city for a children's ward.

Wm. G. Park, the well-known steel manufacturer of Pittsburgh, has been investing in real estate in New York City. He recently bought the business properties

at 54-56 Fulton street and 29-31 Cliff street at $80,000 and 27 Cliff street at $55,000.

Hugh B. Wick has been made purchasing agent of the National Steel Company, and will have his offices at Youngstown, Ohio.

Andrew M. Moreland, formerly secretary of the Carnegie Steel Company, has purchased the site now occupied by the Pittsburgh Bank for Savings, on Fourth avenue, Pittsburgh, for $60,000. Mr. Moreland bought the property as an investment.

Henry C. Fry, president of the National Glass Company of Pittsburgh, has resigned.

S. Whinery, consulting engineer, has opened an office at 95-97 Liberty street, New York. He will give special attention to municipal work, to the expert examination of railroad projects, to water power development, and to the development of industrial enterprises.

Prof. Michael I. Pupin, adjunct professor of mechanics at Columbia University, has been promoted to a full professorship in electro-mechanics by the trustees of the university. The chair was created especially for him in recognition of his achievements in long distance telephony.

F. F. Brow, master mechanic of blast furnaces of the National Steel Company at Youngstown, Ohio, has resigned to accept a similar position in charge of the three furnaces of M. A. Hanna & Co. at Buffalo.

P. B. Foley has resigned as superintendent of roll turners at the Ohio works of the National Steel Company, at Youngstown, Ohio. J. F. Gardner succeeds him.

Reuben Miller, treasurer of the Crucible Steel Company of America, of Pittsburgh, has been re-elected treasurer of the Chamber of Commerce of that city.

P. B. Morrison, who has been treasurer of the Ohio Rolling Mill Company of Findlay, Ohio, since their organization, has retired on account of poor health, which necessitates a rest from active business.

The National Wire Corporation.—At the annual meeting of the National Wire Corporation, held in New Haven, Conn., the following officers were elected: President, E. R. Hastings of Boston, Mass.; treasurer, Everett B. Webster, New Haven; secretary, Walter H. Seaver, New Haven; assistant treasurer, William E. Hitchcock; directors, Theodore B. Casey, Edwin W. Cates and George E. Armstrong, all of Boston, Mass. The president and treasurer are also directors, making a board of five members. President Hastings succeeds himself, having been elected to that position about a month ago, when former President Wales resigned. He is a member of the banking firm of Devens, Lyman & Co. of Boston. The city of New Haven has guaranteed to the National Wire Corporation proper fire protection and certain other inducements. Therefore the plant will be rebuilt with a capacity about two and one-half times the production of the old rod mill and also with a much larger capacity in the wire and nail mills. The plans are about completed and work is to be begun at once.

David E. Park, the well-known steel manufacturer of Pittsburgh, has purchased five acres of river front land in Jefferson township, above Elizabeth, Pa., on the Monongahela River, for $10,000. It is said Mr. Park has purchased about 300 acres of land in this vicinity within a year.

Suggestions for changes to be made in the wage scales of the Amalgamated Association of Iron and Steel Workers are being received at the offices of the association in Pittsburgh. From the number of changes suggested, the coming meeting of the association in Millwaukee in May will be an important one.

The Carborundum Company have called a special meeting of stockholders for May 14, to take action on a proposed increase in the capital stock from $300,000 to $600,000, and an increase in the bonded debt from $75,000 to $400,000.

OBITUARY.

NOTES.

GEORGE H. STARBUCK, who was in the employ of the Government as supervising inspector of steam vessels, died in Troy, N. Y., March 7, aged 78 years. He was a well-known engineer and before receiving his Government appointment, owned and operated a foundry on Starbuck's Island, near Troy. Mr. Starbuck was a graduate of the Rensselaer Polytechnic Institute.

WILLIAM H. CARPENTER of Providence, R. I., died recently aged 40 years. He was born in Providence and early in life entered the foundry business conducted by his father. A partnership was formed in 1889 and later incorporated under the name of A. Carpenter & Sons Foundry Company, in which William H. Carpenter became president and general manager, a position he held at the time of his death. Mr. Carpenter's health had been failing for the past three years.

JOHN D. HART, at one time a well-known engineer, inventor and manufacturer, died on February 28 at his home in Chicora, Babler County, Pa., aged 84 years. Mr. Hart was born in England and became an engineer and traveled in different parts of the world. He was attracted to Pennsylvania by the early oil developments and became a manufacturer of oil well supplies and boilers. He obtained a number of patents on his mechanical inventions.

WILLIAM BOYD, who was for many years engaged in the iron business in Baltimore, Md., died on February 28, at his home in that city, aged 66 years.

EDOUARD DELAMARE-DEBOUTTEVILLE, who was the designer of the Cockerill gas engine for blast furnace gas, died at Fontaine-le-Bourg, near Rouen, France, on the 16th ult., at the age of 45 years.

WILLIAM W. SMITH, of the firm of Smith & Smith, proprietors of the Eagle Foundry, Lowell, Mass., committed suicide by hanging on March 7. Mr. Smith had been in ill health and despondency over his condition is believed to have been the cause of his act. He was 37 years of age.

ALBERT BLOOD, one of the oldest and most respected business men of Lawrence, Mass., passed away on March 7 at his home in that city at the venerable age og 83 years. He was born in Andover, Mass., and learned the machinists' trade in that town. Later he built a machine shop in North Andover and conducted the business under the firm name of Miller & Blood. In 1854 he erected the Merrimac Machine Works at Lawrence, which business he conducted successfully until failing health caused him to retire from active life three years ago.

GILBERT WILKES, head of the firm of Gilbert Wilkes & Co., Incorporated, mechanical and electrical engineers, of Denver, Col., died March 11 in that city. Mr. Wilkes was for 11 years an officer in the United States Navy, and also served on board the "Yosemite" in the war with Spain.

At a meeting of the Board of Directors of the Illinois Electric Vehicle Transportation Company, held in Chicago on February 23, it was decided to dissolve the corporation. The reason for such action was that owing to the condition of the streets of Chicago and the consequent cost of maintaining the electric vehicles the company could not operate them on a successful basis.

The Norwalk Iron & Steel Company.—Bids have been asked for the building of the new steel plant of the Norwalk Iron & Steel Company, at Norwalk, Ohio. The main building will be 120 x 600 feet, in which will be a 16-inch roll train, heating furnaces, &c. Bids will soon be asked for the rolling mill machinery, power plant, &c.

The Berwind-White Coal Mining Company, in the Central West mining field, have announced that an average advance of 20 per cent. in wages given their employees April 1, 1900, will be continued until April 1, 1902. This notice affects about 10,000 men.

A Heavy Increase in Pig Iron Production.

Stocks Decline.

In spite of a heavy increase in the working capacity during February there has been a considerable decline in the stocks of pig iron, notably in the West, while in the East the stocks have remained fairly stationary.

The weekly capacity of the furnaces in blast on March 1 compares as follows with that of the preceding periods:

	Furnaces in blast.	Capacity per week. Gross tons.
March 1, 1901	248	292,899
February 1	245	278,258
January 1	233	250,351
December 1, 1900	211	228,846
November 1	201	215,304
October 1	213	223,169
September 1	228	231,778
August 1	240	244,426
July 1	284	283,413
June 1	293	296,376
May 1	292	293,850
April 1	291	289,482
March 1	293	292,643
February 1	296	298,014
January 1	290	294,186
December 1, 1899	288	296,959
November 1	277	288,522
October 1	265	278,650
September 1	257	267,335
August 1	244	267,672
July 1	237	263,363
June 1	220	251,062
May 1	217	250,095
April 1	205	245,746
March 1	192	228,195
February 1	195	237,639
January 1	200	243,516

The condition of the charcoal furnaces at the beginning of the month was as follows:

Charcoal Furnaces in Blast March 1, 1901.

Location of furnaces.	Total No. of stacks.	No. in blast.	Capacity per week.	No. out of blast.	Capacity per week.
New England	7	3	280	4	360
New York	2	2	237	0	0
Pennsylvania	13	2	95	11	500
Maryland	4	0	0	4	442
Virginia	3	0	0	3	190
Ohio	6	1	72	5	344
Kentucky	3	0	0	3	200
Tennessee	6	3	1,136	3	400
Georgia	4	1	369	3	549
Alabama	4	3	984	1	325
Michigan, Missouri and Wisconsin	13	10	4,775	3	1,225
Texas	4	1	126	3	775
Totals	69	26	8,074	43	5,310

As compared with previous months the record of active charcoal furnaces stands as follows:

	Furnaces in blast.	Capacity per week.
March 1, 1901	26	8,074
February 1	31	8,325
January 1	32	7,097
December 1, 1900	32	6,779
November 1	30	7,923
October 1	31	8,248
September 1	31	8,227
August 1	31	8,295
July 1	32	8,492
June 1	27	7,605
May 1	25	6,894
April 1	29	7,838
March 1	29	7,047
February 1	32	8,004
January 1	30	7,457
December 1, 1899	30	7,511
November 1	29	7,113
October 1	25	6,222
September 1	24	5,665
August 1	22	6,189
July 1	20	6,018
June 1	16	4,943
May 1	20	4,846
April 1	17	4,777
March 1	16	4,330
February 1	17	4,967
January 1	20	6,026

During February there were blown in: Buffalo furnace in New York, one Hokendauqua and one Saucon of the Thomas Iron Company, one new Carrie of the Carnegie Steel Company, Alice in the Chenango Valley, Deborah in Maryland, Low Moor in Virginia, one Bellaire in the Wheeling district, two Lorain in Ohio, Fulton in the Hanging Rock region, and one Pioneer in Alabama. Work was stopped by one Swede in the Schuylkill Valley, Clinton in Pittsburgh, Bay View at Milwaukee, Princess in Virginia and Helen in Tennessee.

The condition of the coke and anthracite furnaces at the beginning of the month was as follows:

Coke and Anthracite Furnaces in Blast March 1, 1901.

Location of furnaces.	Total No. of stacks.	No. in blast.	Capacity per week.	No. out of blast.	Capacity per week.
New York	14	3	4,371	11	7,757
New Jersey	8	3	2,145	5	2,695
Spiegel	3	3	589	0	0
Pennsylvania:					
Lehigh Valley	29	18	10,692	11	4,387
Spiegel	1	1	129	0	0
Schuylkill Valley	13	8	6,847	5	3,197
Upper Susquehanna	4	3	3,356	1	336
Lower Susquehanna	9	4	4,704	5	1,986
Spiegel	1	1	512	0	0
Lebanon Valley	13	11	9,706	2	1,450
Pittsburgh District	32	27	62,013	5	8,975
Spiegel	1	1	1,986	0	0
Shenango Valley	15	10	14,399	5	5,103
Western Pennsylvania	23	13	18,200	10	5,811
Spiegel	1	1	850	0	0
Maryland	5	4	6,390	1	1,200
Wheeling District	8	7	10,671	1	1,400
Ohio:					
Mahoning Valley	13	12	24,500	1	1,617
Central and Northern	14	12	23,860	2	2,082
Hocking Valley	2	2	800	0	0
Hanging Rock	14	9	4,629	5	1,462
Illinois	16	14	28,102	2	3,120
Spiegel	1	1	860	0	0
Minnesota	1	0	0	1	763
Wisconsin	5	3	2,971	2	1,854
Missouri	1	0	0	1	570
Colorado	2	1	1,550	1	1,550
The South:					
Virginia	20	15	9,997	5	2,586
Kentucky	5	3	969	2	1,370
Alabama	38	26	23,859	12	7,234
Tennessee	12	6	5,168	6	3,747
Georgia	1	0	0	1	450
North Carolina	2	0	0	2	437
Totals	327	222	284,825	105	73,139

In comparison with previous months the record of the coke and anthracite furnaces stands as follows in gross tons:

	Number in blast.	Capacity per week.
March 1, 1901	222	284,825
February 1	214	278,258
January 1	201	243,254
December 1, 1900	179	222,067
November 1	171	207,381
October 1	182	214,921
September 1	197	223,551
August 1	209	236,131
July 1	252	274,921
June 1	266	288,771
May 1	267	286,956
April 1	262	281,644
March 1	264	285,596
February 1	264	290,010
January 1	250	286,729
December 1, 1899	253	289,448
November 1	248	281,409
October 1	241	272,428
September 1	233	261,670
August 1	222	261,483
July 1	217	257,345
June 1	204	249,119
May 1	197	245,249
April 1	188	240,969
March 1	175	223,865
February 1	178	232,672
January 1, 1899	180	237,490
December 1, 1898	177	229,510
November 1	176	222,988
October 1	172	209,903

Furnace Stocks.

The position of furnace stocks, sold and unsold, as reported to us, was as below on March 1, the same furnaces being represented as in former months. This does not include the holdings of the steel works producing their own iron.

Stocks.	Oct. 1.	Nov. 1.	Dec. 1.	Jan. 1.	Feb. 1.	Mar. 1
Anthracite and Coke	608,587	573,932	493,702	489,450	483,528	455,840
Charcoal	61,944	67,514	62,934	69,213	73,236	79,603
Totals	670,531	641,466	556,636	558,663	556,764	535,443

Warrant Stocks.

The American Pig Iron Storage Warrant Company report the following stocks:

Stocks.	Oct. 1.	Nov. 1	Dec. 1.	Jan. 1.	Feb. 1.	Mar. 1.
Coke and Anthracite	20,300	18,500	17,400	15,000	13,000	12,600
Charcoal	1,500	1,500	1,400	1,400	1,400	1,400
Totals	21,800	20,000	18,800	16,400	14,400	14,000

Boston Franklin Institute Held Up.

Boston still seems to have great difficulty in deciding on the use to be made of the Franklin Fund. For more than six years the disposition of this fund, which now amounts to nearly four hundred thousand dollars, has been a matter of dispute. At one time it seemed likely that the money would be used for the establishment of a trade school; then the idea of a great lecture hall, with meeting rooms for trade associations, was in favor, while some urged its use in the erection of public baths and gymnasiums. All these plans fell through, however, and three months ago it was announced that the trustees had agreed to devote the money to the erection of a Franklin Institute, modeled in a general way after the Cooper Union of New York. It was generally supposed at the time that this decision was final and that, at last, the Franklin Fund would be put to a purpose in line with Benjamin Franklin's ideas. The trustees, however, appear to have again changed their minds, for at a meeting held in Boston last week the managers of the fund, consisting of the Board of Aldermen and the pastors of the three oldest city churches, passed a resolution rescinding all former resolutions and orders relating to the fund, and appointed a committee to appear before the Massachusetts Legislature to oppose a bill creating the Franklin Institute. A committee was also appointed to prepare a new plan for the disposition of the fund. The reason for this change of front is not apparent, unless it be that the bill provided that the proposed Franklin Institute should be managed by a board of seven trustees, whose members should be nominated by the trustees of the Massachusetts Institute of Technology, the Boston Public Library and the Museum of Fine Arts, and by the Boston Chamber of Commerce, the Central Labor Union, the Building Trades Council and the Boston Master Builders' Association, respectively, these trustees to have charge of the institute and to erect a suitable building according to plans approved by the managers of the fund. This scheme, which is calculated to place the management of the proposed institute in practical and capable hands, and separate it from a possible infusion of politics, would necessarily take the active control out of the hands of the city Aldermen and their clerical *confrères*, the present trustees of the fund. Presumably the latter do not look with favor upon such a renunciation of control and they are preparing to upset the scheme which they formerly approved. It is to be regretted that a project which promised to give to the Boston mechanics a really valuable educational institution is likely to be blocked indefinitely by the present action of the Franklin Fund managers.

Chillcott-Evans Chain Company.—As briefly noted in these columns last week, the Chillcott-Evans Chain Company, Allegheny, Pa., will apply for a charter of incorporation, with a capital of $25,000. The Chillcott-Evans Chain Company were organized about a year ago by Daniel Evans and Arthur Chillcott, both practical chain makers. The business has grown consideraby, and in the new concern they will have associated with them William D. Sharp, George Eisenbeis, Dewi Chillcott and others. Plans for the enlargement of the present chain works have been prepared and a large amount of machinery is to be added to the plant as soon as possible. The concern will manufacture all sizes of steel and iron chains for manufacturing and contracting firms, as well as for shipping and other commercial purposes.

The Ontario Government has decided to prohibit the export of natural gas from Ontario into the United States. Many small towns in the Canadian province, located along the Detroit River, use natural gas. Their supply has been decreasing for some time, owing, it is said, to the drafts made on the fuel by an American company, who pipe the gas over the river for use in Detroit. This company have 118 miles of mains laid and a large sum invested in the business, all of which will become valueless if the Ontario Government carries out its present intentions.

MANUFACTURING.

Iron and Steel.

The Anniston Rolling Mill Company, Anniston, Ala., have purchased the plant formerly known as the Anniston Rolling Mills, Thomas J. Rowley being president; William Davies being secretary and treasurer, and Ernest F. Rowley superintendent. The mill consists of a 20-inch forge train served by 12 single puddling furnaces, and one 12-inch bar mill, with necessary shears, boilers, &c. The work of adding an 8-inch guide mill has begun. It is proposed to manufacture bar iron and T-rails of small sections, angles, channels and a general line of specialties of iron and steel for architectural, agricultural, wagon and carriage manufacturers.

The Union Wire Mill Company, East St. Louis, Ill., drawers of all kinds of wire, report a very active demand. Their plant is being operated double turn. Chas. F. Hintze, well known to the trade, is superintendent of the plant. Herman Kreibohm is president and Horace J. Eggmann secretary and treasurer.

It is officially announced that the Republic Iron & Steel Company will not build a mill at Youngstown, Ohio, to make steel rails. It is claimed the concern never had such a project in view.

The small 72-inch plate mill of the Tidewater Steel Works was placed in operation on Friday last, after an idleness of almost 12 years.

The Parkersburg Iron & Steel Company, Empire Building, Pittsburgh, who are building a four-mill sheet plant at Parkersburg, W. Va., have placed contracts for nearly all their equipment. The steel buildings have been given to Wm. B. Scaife & Sons of Pittsburgh. The main building will be 450 x 120 feet, and will contain four hot mills, four cold mills, two roughing mills and a bar mill.

The Eclipse Mfg. Company of Pittsburgh, with a capital stock of $50,000, are building a small plant in that city for the manufacture of iron and steel forgings. The main building is to be 75 x 150 feet, and the company expect to start running about April 1.

The American Tin Plate Company advise us that they have no intention of building a $1,000,000 tin plate plant in Pittsburgh, or at any other place.

The Cuyahoga Iron & Steel Company, organized recently at Cuyahoga Falls, Ohio, with $100,000 capital stock, have placed a contract for their main building with George H. Reed of that place. The building will be 45 x 180 feet, frame structure with iron siding. The company have contracted for the equipment and the plant will be in operation about July 1, employing 75 men.

On Monday, March 11, the new continuous finishing mill at the Ohio Works of the National Steel Company, Youngstown, Ohio, was started up. It is expected that No. 3 blast furnace, which is nearly completed, will be lighted up about April 1. This new furnace will give the National Steel Company three large blast furnaces at Youngstown, with a total daily capacity of about 1800 tons. The new continuous mill is the first finishing department aside from the rail mill that the National Steel Company own. This steel plant, which has been on rails for some time, has gone on billets. The demand for billets has been so great that the National Steel Company, like other steel concerns, have been unable to ship steel as fast as wanted by their customers. For this reason the Ohio Works have been taken from rails to billets sooner than was intended.

On April 1 the offices of J. E. Wright, president of the La Belle Iron Works, will be removed to the Jefferson Iron Works, at Steubenville, Ohio, to assume charge of the property owned by the concern at that place.

The Cleveland-Cliffs Iron Company will build a new charcoal blast furnace plant at Marquette, Mich. The plant will be equipped in the most modern manner. Compound condensing engines will be installed and electric power will be used for the distribution and delivery of materials. Frank C. Roberts & Co. of Philadelphia, Pa., are the engineers for the company.

The Union Steel Company, Pittsburgh, who are building open hearth steel works, rod, wire and wire nail mills at Donora, Pa., advise us that they expect to have their plant in operation in the latter part of May.

Furnace B, Colorado Fuel & Iron Company, Denver, Col., was blown out February 20 for relining.

The Parkersburg Iron & Steel Company, Empire Building, Pittsburgh, who are building a four-mill sheet plant at Parkersburg, W. Va., have placed most of their contracts, as already noted in these columns. As stated before, the contract for the buildings has been given to Wm. B. Scaife & Sons of Pittsburgh, while a 1500 horse-power engine will be furnished by Bass Foundry & Machine Company of Fort Wayne, Ind. There will be a battery of boilers of 1000 horse-power. The Parkersburg Iron & Steel Company have a capital stock of $250,000, and are chartered under the laws of West Virginia. A. H. Guilfuss is president and W. R. Guilfuss is secretary and treasurer.

At a meeting of the stockholders of the Parkersburg Wire Nail Company, Parkersburg, W. Va., held recently, directors

were elected as follows: J. W. Wolfe, R. H. Rutherford, T. J. Anderson, C. C. Wentz, C. A. Hayhurst, W. R. Smith, G. W. Wentz, W. H. Rutherford and E. G. Martin. The directors elected R. H. Rutherford, president; E. G. Martin, vice-president; C. C. Wentz, secretary; J. W. Wolfe, treasurer; T. J. Anderson, general superintendent, and A. J. Wilkinson, superintendent of works.

The puddling mills of Brown & Co., Incorporated, of the Wayne Iron & Steel Works of Pittsburgh, have been put on triple turn.

The Saxton Furnace Company, Saxton, Pa., are installing a new 500 horse-power Wheeler boiler which when in service will enable them to increase the output of the furnace fully one-half its present capacity.

Capitalists of Pittsburgh and Cumberland are negotiating to take the plant of the Potomac Steel Company, at Cumberland, from the receiver, E. H. Walsh, and operate it. The plant has been closed down for some time with little prospect of being operated.

The creditors of the Continental Iron Company of Niles, Ohio, now in bankruptcy, are forming a plan to organize a corporation, each taking stock to the amount of their claims, purchasing the Wheatland mill and putting it in operation. It is claimed the present condition of the iron market warrants the taking of such action. A number of the creditors are experienced iron men, and would lend their assistance to such an undertaking.

The Lady Ensley Furnace, at Sheffield, Ala., of the Sloss-Sheffield Steel & Iron Company, has gone into blast. The Hattie Ensley is to follow in a month.

The American Steel Foundry Company, St. Louis, Mo., whose works are located at Granite City, Ill., have now under way the construction of 140 Goodwin steel dump cars, Class G. These cars are leased to railroads and not sold outright. They are built to carry 80,000 pounds and yet are capable of handling 200,000 pounds. M. C. B. dimensions for 80,000-pound capacity trucks are used, and because of the exceptionally favorable circumstances under which cars of this nature are handled the efficiency of the trucks is remarkably increased. The American Steel Foundry Company are also building steel dump cars of their own design for the Arizona & New Mexico Railroad, for handling ore and coal, and for the Union Sand Company, St. Louis. A notable achievement of this company has been the securing of a sample order from the Caledonian Railway Company of Scotland for 20 steel gondola cars, 30 gross tons capacity without heaping. These cars are to be an entirely American creation, excepting only the couplings and buffers, which must be made to interchange with the railway company's present standard. The cars are to be shipped knocked down and afterward erected at Glasgow, to be delivered to the company in running order. It may be remarked that the American Steel Foundry Company use standard rolled shapes and plates only in all their steel cars.

Machinery.

The Wm. B. Pollock Company of Youngstown, Ohio, have sold their present plant and ground to the Wm. Tod Company of that city, and will erect a large foundry and machine shops on the old Himrod Furnace site, which the firm have bought. The new works to be erected by the Wm. B. Pollock Company will be much larger than the present shops, giving the concern better and larger facilities for the building of steel plate construction, blast furnaces, steel works, rolling mills, self supporting chimneys, riveted pipe, converters, ladles and all kinds of rolling mill machinery. Wm. B. Pollock is president of the concern, Porter Pollock is general manager, W. G. Wilson secretary and treasurer, C. W. McClure is general manager, and W. W. McKelvey superintendent.

It is probable that the business of J. C. McNeill Boiler Company at Akron, Ohio, will be reorganized. A good showing has been made under the receivership, and some of the leading business men of Akron are desirous of putting the firm on a solid financial basis.

J. C. Born and Bro., Belleville, Ill., builders of upright engines and Crescent emery grinders, have added a new style of emery wheel stands to their line. A very promising business is reaching them from various sections of the country.

Robert Wetherell & Co., machinists, engine and boiler builders, at Chester, Pa., intend enlarging their large machine shop.

The Weatherly Foundry & Machine Company, Weatherly, Pa., have been awarded the contract for furnishing all locomotive, car castings and machinery for the Lehigh Valley Railroad for the coming year. It is estimated that nearly 6000 tons will be used. The Weatherly Company have a foundry 50 x 200 feet and a 35-ton per day cupola situated on the Lehigh Valley line. The officers are Frederick Bertolette, president; Wm. H. Koons, vice-president; James F. Kressley, secretary; Elmer Warner, treasurer.

Z. W. & G. W. Wheland, proprietors of Wheland Machine Works, Chattanooga, Tenn., have purchased a controlling interest in the Chattanooga Machinery Company. The new officers are A. D. Catlin, president, and Z. W. Wheland, secretary and treasurer. The plant will be improved and the capacity greatly increased. The Catlin key seater, which they intend to manufacture quite extensively, they report is taking hold in good shape, the output being sold ahead four weeks. The Niles Tool Works are representing them in Great Britain, and they are negotiating for Continental representation.

The Hoover, Owens & Rentschke Company of Hamilton, Ohio, manufacturers of Corliss engines, have been reorganized and will be incorporated within a few days with $2,000,000 capital stock. The Union Trust Company and the Savings Bank of Cincinnati are underwriting one-half the stock, which will be preferred. The company will set aside $250,000 for doubling the present capacity of the plant, which now employs 550 skilled hands.

The Cleveland Car Company of Cleveland, manufacturers of industrial railway cars and fire brick machinery, have secured an export order from Germany for 100 industrial cars, to be delivered in three months. The company expect soon to close another contract with German manufacturers amounting to nearly $20,000. A domestic order was received recently for 150 brick dryer cars.

The York Mfg. Company, York, Pa., manufacturers of ice making and refrigerating machinery, have received a contract for a large ice making plant, to be built in one of the leading towns in Holland.

The Wheeling Mold & Foundry Company, Wheeling, W. Va., have removed their Pittsburgh office and warerooms from 107 Wood street to first floor Empire Building, Pittsburgh.

The Ellwood City Gas Engine Company, Ellwood City, Pa., advise us that their plant, which was burned down last week, will be rebuilt as rapidly as possible on a larger scale, and the firm expect to resume operations within 60 days.

The Chambersburg Engineering Company, Chambersburg, Pa., have awarded the contract for an extension to their machine shop to Nelson & Buchanan. The new building will be equipped with a 12-foot planer and a traveling crane. The company make a specialty of steam hammers, hydraulic riveters, flanging presses, &c., and are at present filling orders for hammers and hydraulic equipment for boiler shops for the Northern Pacific Railway, Chicago & Alton, Philadelphia & Reading Railway, Erie Forge Company, Eastern Forge Company, Benj. Atha & Co., Bethlehem Steel Company.

J. H. Day Company, Cincinnati, Ohio, manufacturers of bakers, laboratory, paint and confectioners' machinery, have incorporated with a capital of $100,000. The new company succeed to the plant and business formerly conducted by J. H. Day under the style of J. H. Day & Co., at Harrison avenue and Bagen street. Associated with Mr. Day are Maurice E. Lyons and Frank M. Dudley, both of whom have been with the old firm for many years.

The New Albany Mfg. Company, New Albany, Ind., manufacturers of quarry machinery, channelers, travelers, &c., have received an order from the Berger Mfg. Company of Canton, Ohio, for ten sheet metal housings weighing 24,000 pounds each, which they expect to complete by June 1.

Cook & Sons, Americus, Ga., will build an extension to their foundry and machine shop, which they expect to have completed by the latter part of April.

As soon as the weather will permit, the Stoever Foundry & Mfg. Company of Myerstown, Pa., will erect a large machine shop and enlarge their foundry so as to double their present capacity. The additions will be equipped with most improved appliances, some of which have already been purchased, the remainder being filled in as necessity requires. Heretofore the company have had a great deal of work done elsewhere, and as soon as the extensions are completed they will be able to do all their own work, and besides their present specialty, boiler fronts and castings, they intend branching out into other lines of foundry work, also work in brass.

The Erie Railroad Company are contemplating the erection of large car and locomotive repair shops at Salamanca, N. Y. Should their plans be carried out it is probable that the plants at Meadville, Pa.; Hornellsville, N. Y.; Kent, Ohio, and Buffalo, N. Y., will be abandoned and all work concentrated at the new shops.

Alfred Box & Co., Philadelphia, Pa., manufacturers of cranes, hoists, &c., recently obtained from the Allison Mfg. Company a contract to furnish a 15-ton electric crane with a 4-ton auxiliary. This crane is to be of the 4-motor type and will be of 50 feet span. The generator, which will be a General Electric of 27-kw. capacity, and all the electrical equipment, as well as the runways, some 240 feet, and necessary columns, will be furnished by Messrs. Box & Co.

The Wm. Tod Company, Youngstown, Ohio, have shipped four large compound condensing engines to the new plant of the Sharon Steel Hoop Company, at Sharon, Pa.

The Wm. B. Pollock Company of Youngstown, Ohio, who are to erect new works on the Himrod Furnace site, as already stated in these columns, have placed additional contracts for buildings and equipment. The new works will practically be contained in four large buildings, while there will be a number

of smaller ones. The main building will be the erecting and machine tool structure. It will be steel frame, 120 x 300 feet, and equipped with modern tools and appliances. It will contain five electric traveling cranes, two of 20-ton, one of 10-ton and two of 5-tons capacity, furnished by the Morgan Engineering Company of Alliance, Ohio. The forge building will be of steel, 60 x 175 feet, the cranes for which will be supplied by the Whiting Foundry & Equipment Company of Chicago. The warehouse will also be of steel, 60 x 140 feet. The engine house and power building will be of brick, 50 x 100 feet. A large office building, designs for which have not been drawn, will also be built. The entire plant throughout will be of most modern construction and design, with the best equipment that can be had. The capacity of the firm for heavy plate construction, blast furnace and rolling mill work of all kinds will be more than doubled when the new works are in operation.

The Wm. Tod Company, engineers, founders and machinists, Youngstown, Ohio, have let the contract for the erection of a new foundry. The steel frame building, which will be 125 x 250 feet, was given to the American Bridge Company, and will be turned out at the Youngstown works of that concern. The foundry will be located on the site of the present one, but will be much larger.

Bovaird & Seyfang Mfg. Company, manufacturers of boilers, engines, &c., at Bradford, Pa., are contemplating the rebuilding of their shops.

The plants of the two boiler factories, Selders & Co. and International Boiler Works Company, at East Stroudsburg, Pa., have combined under the name of the latter concern. From now on the new company will operate the Selders & Co. plant, in connection with their own, as shop No. 2, and will more thoroughly classify their work, placing vertical boilers, stacks and light work at the new plant and making large horizontal tubular boilers and all heavy work at the old. It is probable that many improvements will be made in the near future.

Foundries.

Cyrus Currier & Sons, machinists and founders, contemplate building a new foundry, which will contain three times as much floor space as they now have at their plant in Newark, N. J. The old buildings in Market street will be dismantled, the lower floor being used for stores and the upper ones for tenants requiring power.

The American Steel Casting Company will greatly enlarge their plant at Sharon, Pa. The contract for a large steel frame building to be covered with corrugated iron has been placed with the Riter-Conley Mfg. Company of Pittsburgh.

E. M. Haubold will erect a $10,000 iron foundry at Harrison, Ark.

F. R. Patch Mfg. Company, Rutland, Vt., have increased their floor space by an addition 16 x 82 feet to their foundry.

The Buffalo Foundry Company of Buffalo, N. Y., expect to have their foundry running again by April 1.

The foundry of the New York Car Wheel Works, at Buffalo, N. Y., was destroyed by fire on the 8th inst. Loss will reach several thousand dollars.

The Novelty Foundry Company, Toledo, Ohio, will shortly incorporate with a capital stock of $50,000. Ground has been purchased and a ten-story brick building 260 x 110 feet will be erected which will be used for the manufacture of light gray iron castings. A majority of the stock has already been subscribed, $20,000 of which is in the hands of parties from Millsboro, Pa., who will dispose of their foundry in that city and go to Toledo to take charge of the new enterprise.

Extensive preparations are being made at the Penn Steel Casting Works for the addition to the foundry. The structure will be of brick, 200 x 100 feet in size, and will be an enlargement of the main foundry. In it will be built another 20-ton open hearth furnace and a 50-ton crane. It is practically a doubling of this prosperous plant's capacity.

The foundry of Mayer Bros., founders and machinists, at Mankato, Minn., was damaged by fire February 23 to the extent of $3186, which loss has been adjusted. The firm have purchased a larger site and are erecting a new foundry.

The Marion Malleable Iron Works, Marion, Ind., are building an addition 80 x 40 feet to their foundry to increase their molding capacity.

The Engelberg Huller Company, Syracuse, N. Y., have completed their new building in West Fayette street. It is one story high, of steel construction, 32 x 132 feet, and will be used for making gray iron and brass castings. Heretofore the company have had their castings made outside their own plant.

Hardware.

The citizens of Decatur, Ill., are endeavoring to induce the Paxton Hardware Mfg. Company to remove to that city from their present location at Paxton, Ill. The company manufacture a line of kitchen hardware and galvanized and malleable iron goods and have an electro-plating plant. The business was established 12 years since and has developed to a point making a better location desirable.

The branch house of E. C. Atkins & Co., Indianapolis, Ind., at Atlanta, Ga., have recently erected a building at the rear of their store, 61 South Forsyth street, for repairing saws of all kinds. Its dimensions are 40 x 100 feet. The machinery is of the most modern type. Stock regularly carried in their Atlanta branch embraces everything manufactured by the parent house. The first year's business, which has just closed, has exceeded expectation. The sales manager is Frank X. Ohlen.

The tack factory at Rockford, Ill., which has been idle for a long time, is being put in order to resume operations in April. It will be under the management of Judson Joslyn.

The A. A. Wood & Sons Company, Atlanta, Ga., report a good demand from hardware dealers in all parts of the country for their hollow augers. To fill orders their works are being run to their fullest capacity.

The G. H. Barnett Company, Black Diamond File Works, Philadelphia, Pa., have recently purchased two properties, one 36 x 100 feet, the other 90 x 100 feet. These properties adjoin the Barnett Company's present works and will be used to further extend their facilities for the manufacture of files.

Weber, Kirch Mfg. Company, formerly Kahoka Flue Stop Company, Kahoka, Mo., owing to their expanding business and the need of better shipping facilities, have removed to Keokuk, Iowa. The company are now making the Kirch adjustable flue stop, and expect to put several other hardware specialties on the market as soon as they get their plant in good working order.

Miscellaneous.

The New Castle Stove & Range Company have been organized at New Castle, Pa., with a capital stock of $500,000. The incorporators are William Patterson, George W. Johnston, C. H. Akens and Charles J. Kirk, all of New Castle. It is the intention of this new concern to erect a very large plant in New Castle, to make stoves, ranges and hot water heating appliances. It is said the plant will employ about 1200 hands.

The Railway Spring & Mfg. Company of Pittsburgh will apply for a charter on March 20. The new concern will erect a plant in Pittsburgh for the manufacture of a newly patented device for railway cars.

The National Malleable Casting Company, Sharon, Pa., will enlarge their plant.

The King Bridge Company of Cleveland have recently completed improvements in their plant which increase their capacity fully one-third. The company have recently entered into a contract with the Philadelphia Transit Company, Philadelphia, for a number of street railway bridges and viaducts. The contract amounts to about $250,000. Another large contract held by this company is for the construction of a double track cantilever bridge at the mouth of the Cuyahoga River, in Cleveland. The bridge is for the Big Four Railway and the contract price is about $60,000.

Work on the new structural plant of the McClintic-Marshall Construction Company, at Rankin Station, Pa., was started last week. The main building will be 450 x 280 feet, and there will be a number of smaller buildings. There will also be an office building and power house. The McClintic-Marshall Construction Company are enlarging the capacity of the Pottstown Bridge Works, at Pottstown, Pa., which they also operate.

Pleuger & Henger Mfg. Company, St. Louis, Mo., makers of hardware and water works specialties, are in receipt of a constantly increasing export business. Late shipments have been made to Continental countries and also to South American ports. They say that domestic inquiry for water works specialties is beginning and that considerable new work in the way of municipal improvements is being projected.

The Havana Metal Wheel Company, Havana, Ill., manufacturers of steel wagons, steel wheels, feed grinders and steel wheelbarrows, have added a department to their plant expressly for the manufacture of plow shapes, Ever Ready plow shares, landsides, bars, cultivator shovels and plow points. They say that the facilities at their command place them in position to furnish goods of first-class quality in crucible and soft center steel at right prices in any quantity.

Among the newly licensed corporations of Iowa are the Voss Brothers Mfg. Company, Davenport, with a capital of $15,000, to manufacture washing machines. The incorporators are W. H., F. P., and John A. Voss.

The Grant Axle & Wheel Company, Springfield, Ohio, have removed to a larger factory.

The Craig Rolling Mills Company were incorporated last week in New Jersey for the purpose of manufacturing Craig silver. An existing plant will be used until the company arranges to put up their own rolling mills. Thornley Dickson, 31 Nassau street, New York City, is counsel.

The Anderson Coupling Company, Portland, Conn., who recently organized, have bought out the firm of Bell & Anderson, including their patents on the Anderson lead pipe coupling, and Anderson lead pipe expanding pliers. For the present they will rent room and power of the Connecticut Steam Brown Stone Company, and will only manufacture the couplings and pliers, later on it is their intention to increase their capital and erect a plant.

The Pacific Sheet Metal Works, Fairhaven, Wash., are building a two-story brick addition 75 x 150 feet to their plant, which will be used as a warehouse. The increase of facilities is necessitated by the large orders received from Alaska canneries.

The Iron and Metal Trades.

Our monthly blast furnace statistics show that the Coke and Anthracite furnaces in blast on March 1 had a weekly capacity of 284,825 gross tons as compared with 269,923 tons on February 1. We are thus approaching the high rate of production of the boom period. We are now running at a rate of, say, 14,750,000 tons of Iron, exclusive of Charcoal metal, and will add to it during the next few months, since a number of very large new furnaces are approaching completion. In spite of this enormous production stocks are actually declining. During February they fell off from 483,528 tons to 455,840 tons. This does not include the Steel works stocks which six months ago were very large, and are now practically wiped out.

The consumption which these figures prove is enormous. It seems almost impossible to understand where this enormous tonnage goes to, and yet there is to-day an actual scarcity of certain grades of Pig Iron, notably those for Steel making purposes. Small lots of Bessemer Pig have sold for prompt delivery as high as $16. Valley furnace.

The scarcity of metal in the Central West is proven by the fact that some round lots of Southern Gray Forge have been sold in Pittsburgh.

An interesting situation confirmative of the enormous tonnage of Steel going into consumption, is brought out in Spiegeleisen. The domestic article is so scarce that a number of large inquiries have come to importers, who probably will put through some business.

While it is true that the leading American interest has captured a very large order for a Pipe line, for a distant country, it should be stated that it is not for Roumania, whose order is still to come. The order in question was taken in competition with the German syndicate and with the English makers, the latter having pooled to take the contract, because none could handle it singly.

Prices for Steel Plates have advanced $2 per net ton, for early delivery, without the direct intervention of the association, whose card rate remains nominally the same. It is within the range of possibilities that buyers may put up the price of Structural material on themselves, if the heavy demand continues.

The flow of orders to the Structural mills continues. The American Bridge Company this week took orders calling for 12,000 tons of material.

The development of the California and Texas oil fields is causing a very large demand for Casing and for Tank Plates. The consumption of the latter is also affected by the large amount of gas house work coming up.

In the Middle West a very serious car shortage is developing and deliveries of material are much delayed.

It is worthy of note, however, that thus far the principal pressure in nearly every branch has been upon the mills of the Central West. The tidewater markets are lagging, relatively, and are somewhat impatiently waiting for the wave of improvement to strike them more emphatically than it has done so far.

A Comparison of Prices.

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type. Declines in Italics.

	Mar. 13, 1901.	Mar. 6, 1901.	Feb 13, 1901.	Mar. 14 1900.
PIG IRON:				
Foundry Pig, No 2, Standard, Philadelphia	$15.25	$15.25	$15.25	$22.50
Foundry Pig, No. 2, Southern, Cincinnati	**13.75**	13.75	12.75	20.25
Foundry Pig, No. 2, Local, Chicago.	**15.00**	15.00	14.50	23.50
Bessemer Pig, Pittsburgh	**16.25**	15.50	14.90	24.90
Gray Forge, Pittsburgh.	**14.25**	14.00	13.15	21.00
Lake Superior Charcoal, Chicago	17.50	17.50	17.50	25.50
BILLETS, RAILS, ETC.:				
Steel Billets, Pittsburgh	**22.00**	21.50	19.75	33.00
Steel Billets, Philadelphia	**23.00**	22.00	21.00	34.50
Steel Billets, Chicago.	nom.	23.00	20.75	36.00
Wire Rods (delivered)	35.00	35.00	35.00	nom
Steel Rails, Heavy, Eastern Mill	26.00	26.00	26.00	35.60
Spikes, Tidewater	1.50	1.50	1.50	2 60
Splice Bars, Tidewater	1.30	1.30	1.30	2 20
OLD MATERIAL:				
O. Steel Rails, Chicago, gross ton	**13.00**	12.50	12.00	18 00
O. Steel Rails, Philadelphia	**16.00**	16.00	15.50	23.50
O. Iron Rails, Chicago, gross ton	**18.50**	18.50	18.00	22.00
O. Iron Rails, Philadelphia	*18.00*	18.00	18.50	25.00
O. Car Wheels, Chicago, gross ton	16.50	16.50	16.50	24.00
O. Car Wheels, Philadelphia	*16.50*	16.50	17.00	22.00
Heavy Steel Scrap, Chicago, gr. ton	12.00	12.00	12.00	17.00
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia	**1.40**	1.40	1.35	2.20
Common Iron Bars, Chicago	**1.55**	1.50	1.45	2.30
Common Iron Bars, Youngstown	**1.40**	1.40	1.30	2 15
Steel Bars, Tidewater	**1.50**	1.45	1.35	2.50
Steel Bars, Pittsburgh	**1.40**	1.35	1.25	2.25
Tank Plates, Tidewater	**1.63**	1.55	1.55	2.15
Tank Plates, Pittsburgh	**1.50**	1.40	1.40	2.00
Beams, Tidewater.	1.63	1.63	1.63	2.40
Beams, Pittsburgh	1.50	1.50	1.50	2.25
Angles, Tidewater	1.53	1.53	1.53	2.40
Angles, Pittsburgh	1.40	1.40	1.40	2.25
Skelp, Grooved Iron, Pittsburgh	**1.65**	1.70	1.45	2 00
Skelp, Sheared Iron, Pittsburgh	**1.70**	1.75	1.50	2.15
Sheets, No. 27, Pittsburgh	**3.05**	3.05	2.85	3.00
Barb Wire, f.o.b. Pittsburgh	2.90	2.90	2.90	3.80
Wire Nails, f.o.b. Pittsburgh	2.30	2.30	2.30	3.20
Cut Nails, Mill	2.00	2.00	2.00	2.50
METALS:				
Copper, New York	17.00	17.00	17.00	16.37½
Spelter, St. Louis	**3.77½**	3.80	3.75	4.45
Lead, New York	4.37½	4.37½	4.37½	4.70
Lead, St. Louis.	**4.22½**	4.22½	4.17½	4.57½
Tin, New York	*26.00*	26.25	26.45	33.00
Antimony, Hallett, New York	*9.00*	9.25	9.25	9.75
Nickel, New York	55.00	55.00	55.00	38.00
Tin Plate, Domestic Bessemer, 100 lbs., New York	4.19	4.19	4.19	4.84

Chicago. (*By Telegraph.*)

Office of *The Iron Age*, 1205 Fisher Building, Chicago, March 13, 1901.

Evidences of the enormous volume of trade are met on every side. The leading manufacturers of Iron and Steel are impressing upon their sales departments the necessity of care in booking additional business. Pittsburgh manufacturers particularly are advising their agents here to refrain from soliciting orders, as they are falling so far behind in making deliveries that in justice to their customers they are obliged to endeavor to catch up with work already booked. Large buyers here report increasing difficulty in securing shipments on contracts, not only because the mills are overwhelmed with work, but also because the railroads are unable to handle the heavy traffic now pouring in on them. Shipments from Pittsburgh have been eight weeks on the way, and shipments from Ohio have taken four weeks which would ordinarily require three or four days. The railroads are not only short of cars, but leading lines do not have sufficient motive power to meet the existing conditions. Meanwhile large manufacturing consumers and wholesale merchants find their trade compelling the placing of additional business. The Hardware trade was never so active as at present. The Agricultural Implement manufacturers, especially those making implements for preparing for crops, find the demand for their products surpassing anything previously experienced. Contracts are now being placed for shipments beginning far in the future in the fear that unless this is done the

buyers may not get what they need. Prices of finished products are advancing under the double stimulus of increasing cost of raw material and the great demand from consumers.

Pig Iron.—Although the actual tonnage placed the past week was not so large as during the preceding week, the situation is steadily growing stronger. The largest sale reported called for 3500 tons, and was made to a car building company. A good number of orders were placed for 500 to 1000 tons, and the general demand from the smaller foundries has been very good. While most of the large consumers are said to be covered to July, the consumption is running so much beyond expectations it is confidently believed that considerable Iron must still be bought for use during the coming three months. The most important inquiries now coming up, however, are for delivery during the last half of the year. The Southern companies are firmly maintaining prices, stocks of Standard grades having been practically wiped out. Local Iron is not only firm, but becoming scarce. The local furnaces are well supplied with business running into the last half of the year. The new stack of the Iroquois Iron Company will blow in in June, but will not immediately relieve the situation, as the company will need the additional product for a considerable period to fill orders now taken. The Illinois Steel Company have two furnaces out of blast, which are being repaired, but they will be blown in on Bessemer, and not on Foundry Iron. Quotations are as follows:

Lake Superior Charcoal	$17.50 to $18.00
Local Coke Foundry, No. 1	15.50 to 16.00
Local Coke Foundry, No. 2	15.00 to 15.50
Local Coke Foundry, No. 3	14.50 to 15.00
Local Scotch, No. 1	15.50 to 16.00
Ohio Strong Softeners, No. 1	16.50 to 16.75
Southern Silvery, according to Silicon	15.65 to 16.10
Southern Coke, No. 1	15.40 to 15.65
Southern Coke, No. 2	14.90 to 15.15
Southern Coke, No. 3	14.40 to 14.65
Southern Coke, No. 1 Soft	15.40 to 15.65
Southern Coke, No. 2 Soft	14.90 to 15.15
Foundry Forge	13.65 to 13.90
Gray Forge and Mottled	13.65 to 13.90
Southern Charcoal Softeners, according to Silicon	15.00 to 17.00
Tennessee Silicon Pig	16.50 to 18.00
Alabama and Georgia Car Wheel	20.65 to 21.00
Malleable Bessemer	15.50 to 16.00
Standard Bessemer	17.00 to 17.50
Jackson County and Kentucky Silvery, 8 per cent. Silicon	17.50 to 18.00

Bars.—Manufacturers are having no difficulty in maintaining prices of mill shipments at 1.55c., Chicago, for either Bar Iron or Soft Steel Bars. The independent mills have advanced prices to those of the great companies, as buyers have been placing orders so freely that the capacity of these mills is well sold up. Some of the largest makers of Bars are refusing to take more orders because they are now so far behind that additional business simply means greater annoyance to themselves and those who buy. The strength of the situation is shown by the fact that a sale of Steel Bars has been made at 1.65c., for delivery beginning in July. The volume of business is very satisfactory, consisting of numerous orders of moderate size. No very large orders have been reported during the week. The demand for Hoops is much better than it has been. They are quoted at 1.90c., base, Chicago, for mill shipment. Jobbers report a continuance of the strong demand from stock and increasing difficulty in endeavoring to keep up assortments. Small lots of Common Iron are held at 1.90c. to 2c., from stock, and Steel is higher, the minimum being now 1.80c. Hoops are firm at 2.10c. to 2.35c., base.

Car Material.—A continued active demand is coming from car builders and manufacturers of car equipment. From present appearance the car builders will enjoy a heavy demand for cars for an indefinite period, as the railroad companies are seriously short of rolling stock.

Structural Material.—None of the large projects, so long under consideration, was brought to a focus during the week, but additional schemes, involving heavy tonnages, are in sight. The Structural mills now have a great deal of business covered by protective figures made to contractors which must, at an early date, develop into orders. Meanwhile the demand for quantities to cover ordinary work is exceedingly good, numerous orders being placed for 100 tons upward. Mill shipments are quoted as follows: Beams, Channels and Zees, 15 inches and under, 1.65c.; 18 inches and over, 1.75c.; Angles, 3 inches and over, 1.55c.; Angles, under 3 inches, 1.65c. rates; Tees, 1.70c.; Universal Plates, 1.55c. to 1.60c. Small lots of Beams and Channels from local yards are quoted at 2.10c. to 2.25c; Angles, 1.90c. to 2c. rates, and Tees, 2.05c. to 2.15c.

Plates.—The demand for mill shipment has been very active. A great deal of business has gone to Eastern mills, while the local makers have booked 2000 tons during the week. Store trade is fair, but not so heavy as jobbers would like. Their time will come when deliveries from mill are more in arrears. An advance of $2 per ton was made on Friday, but it is understood that this advance was made by the manufacturers acting independently and not through the combination. Mill shipments of Tank Plate, ¼ inch and heavier, in carload lots, are quoted at 1.65c. to 1.70c., Chicago. Flange, 1.75c.; Marine, 1.85c. Jobbers quote small lots from store at 1.90c. to 2c. for Tank and 2.10c. to 2.25c. for Flange.

Sheets.—The mills are having a heavy trade in spite of the high prices now ruling. Consumption is on an enormous scale, and manufacturers of Sheet Steel products were probably never busier. Mill shipments of No. 27 Black are quoted at 3.35c., Chicago, and Galvanized at 70 off, but the belief is growing that these products may soon have another advance. Jobbers report an excellent trade, but prices from stock are still irregular. No. 27 Black Sheets continue to be quoted at a range extending from 3.35c. to 3.60c., while Galvanized Sheets are selling at 65 and 10 to 70 per cent. off. Wood's Smooth No. 27 is quoted at 3.70c.; Ordinary Sheets No. 18, 2.85c.; No. 16, 2.50c.; No. 14, 2.35c.; No. 12, 2.20c.; No. 10, 2.10c.

Merchant Pipe.—Trade is very good, with prices well maintained and no inclination observed anywhere to make even slight concessions. Manufacturers' prices, random lengths, are as follows:

	In carloads.		Less than carloads.	
	Blk.	Galvd.	Blk.	Galvd.
⅛ to ½ inch and 11 to 12 inches	59.2	46.2	54.9	40.9
¾ to 10 inches	66.7	53.3	61.9	49.9

Boiler Tubes.—A large business is reported with prices held absolutely to quotations. We quote as follows:

	Steel.	Iron.
1 to 2¼ inches, inclusive	50	40
2½ inches	50	42½
2¾ to 5 inches	60	50

Cast Pipe.—Manufacturers have booked more orders during the past two months than for many years during the corresponding period. The Western orders received are stated not to have included any heavy quantities, but they have been exceptionally numerous, thus running up to a large tonnage. While the demand has thus been strong, prices do not seem to have hardened in proper correspondence. Quotations still continue low.

Rails and Track Supplies.—Sales of Heavy Sections of Steel Rails during the week aggregate about 16,000 tons. The demand has settled to quite a steady trade from week to week. The local mills are now practically sold up on Heavy Sections to August or September. The demand for Light Rails is active, with sales running in excess of the output of the local works. Heavy Sections of Steel Rails are unchanged at $26, and Light Sections are quoted at $26 to $28.50, according to quantity, weight, &c. Light Rails have recently shown a stiffening tendency, the smaller sections particularly having been marked up. Splice Bars are now held at 1.50c; Spikes, 1.80c. to 1.85c., from mill; Track Bolts, with Hexagon Nuts, 2.55c. to 2.60c., and with Square Nuts, 2.40c. to 2.45c.

Billets and Rods.—Inquiries for Billets are being made, but it appears to be impossible to secure either Bessemer or Open Hearth Billets at even a considerable advance over the combination price. Wire Rods are also exceedingly scarce, a good buyer having recently scoured the country and found only one mill willing to take an order for reasonably early delivery, on which the price made was $40, delivered.

Merchant Steel.—Manufacturers are compelled to advance prices on account of the oversold condition of their mills and the increasing cost of raw materials. They

are, however, making advances conservatively, although the circumstances would perhaps justify them in taking radical steps. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery Steel, 1.95c. to 2.05c.; Smooth Finished Tire, 1.75c. to 1.95c.; Open Hearth Spring Steel, 2.15c. to 2.40c.; Toe Calk, 2.40c. to 2.60c.; Sleigh Shoe, 1.70c. to 1.90c.; Cutter Shoe, 2.40c. to 2.60c.; Cold Rolled Shafting, 55 off. Ordinary grades of Crucible Tool Steel are quoted at 6c. for carloads and 7c. from store; Specials, 13c. upward.

Old Material.—Steel Scrap is in much stronger demand than Iron. A better movement, however, is observed in all classes of Scrap than for some time. Dealers are asking considerably higher prices in the hope that the strength of finished products may make Old Material worth much more money. Consumers are combating the attempt to advance prices and refrain from buying. Under the circumstances our quotations may not agree with prices asked, but they represent what conservative members of the trade believe to be fair values. The following are approximate quotations per gross ton:

Old Iron Rails	$18.50 to $19.00
Old Steel Rails, mixed lengths	13.00 to 13.50
Old Steel Rails, long lengths	14.50 to 15.00
Heavy Relaying Rails	20.00 to 22.00
Old Car Wheels	16.50 to 17.00
Heavy Melting Steel Scrap	12.00 to 12.50
Mixed Steel	10.00 to 10.50
No. 1 Busheling	10.00 to 11.00
No. 2 Busheling	9.00 to 9.50

The following quotations are per net ton:

Iron Fish Plates	$16.50 to $17.00
Iron Car Axles	18.50 to 19.00
Steel Car Axles	15.00 to 15.50
No. 1 Railroad Wrought	15.00 to 15.50
No. 2 Railroad Wrought	13.00 to 13.50
Shafting	15.00 to 16.00
No. 1 Dealers' Forge	12.00 to 12.50
Iron Axle Turnings	9.50 to 10.00
Soft Steel Axle Turnings	8.50 to 9.00
Machine Shop Turnings	8.00 to 8.50
Cast Borings	3.50 to 3.75
Mixed Borings, &c	4.00 to 4.50
No. 1 Boilers, cut	9.50 to 10.00
No. 2 Boilers, cut	7.50 to 8.00
Heavy Cast Scrap	11.50 to 12.00
Stove Plate and Light Cast Scrap	8.00 to 8.50
Railroad Malleable	11.00 to 11.50
Agricultural Malleable	10.50 to 11.00

Metals.—Carloads of Lake Superior Copper are quoted at 17½c. and Casting Brands at 17c. Pig Lead is unchanged at 5.32½c. for Desilverized and 4.42½c. for Corroding in 50-ton lots.

Coke.—Consumers of Coke are free buyers, a steady business being reported. Standard Connellsville Coke is held at $5, Chicago, for 72-hour Foundry, but some grades can be had at $4.75 to $4.85.

The American Rolling Mill Company, manufacturers of Bar Iron, have removed their general offices to suite 729, The Rookery, Chicago, from the fourth floor of the same building. They have thus secured much more space, which was needed for proper office facilities. The company's mills are at Muncie, Ind.

Philadelphia.

Office of *The Iron Age*, Forrest Building, Philadelphia, Pa., March 12, 1901.

The Iron and Steel markets in this vicinity are singularly apathetic compared with the buoyancy at other points. Except a tenth advance in Plates and a practical abrogation of the official quotations on Billets, prices are precisely the same as quoted during the past two or three weeks. The demand (except for Plates and Billets) is not unusually active, but the extraordinary reports of activity in the West create the impression that we are merely waiting our turn, which, in due time, will present itself. Under other circumstances manufacturers would probably be more urgent in their endeavors to secure business, but as it is they are satisfied to wait developments. General conditions among consumers of Iron and Steel are all that could be desired, and so far as can be seen the output from all the large shops will be as large, if not larger, than at any time on record. The feeling in the trade is therefore very hopeful, although the failure to respond to the higher prices in other markets is somewhat of a disappointment.

Pig Iron.—There is little or no change from last week. The demand is fair, but the pressure to sell is not great, and as stocks have been pretty well cleaned up (this being particularly the case as regards job lots), the feeling is a little better, and quoted rates are closely adhered to. The average of sales of No. 2 X Foundry would be about $15.25 for city or nearby deliveries, and No. 2 Plain at about $14.50. Low grades Foundry Irons and Mill Irons have been taken quite freely, so that any additional demand at this time would easily lead to stiffer quotations. Furnaces are well sold ahead, and with good prospects in regard to the cost of production there should be a tendency toward better prices for all grades of Pig metal. Basic Iron is in demand, but there appears to be nothing for sale except for deliveries during the last half of the year, for which about $14 at furnace is asked. Taking the entire situation into account it looks as though the movement may be slow, but that the tendency will be toward a gradual improvement. The monthly report of the condition of furnaces, which will no doubt be published in this issue of *The Iron Age*, will throw new light on the situation, and under some conditions may have an important influence. For the present, however, quotations are about as follows for seaboard and nearby points, and about 25c. lower in the Harrisburg and Baltimore districts: No. 1 X Foundry, $16 to $16.25; No. 2 X Foundry, $15 to $15.50; No. 2 Plain, $14.25 to $14.75; Standard Gray Forge, $14 to $14.50; Ordinary Gray Forge, $13.50 to $13.75; Basic (Chilled), $14 to $14.25.

Billets.—Prices are now about what can be agreed upon. The pool is practically ignored, and for the present any way each concern will make its own price. To-day somewhere around $23 would be a fair quotation, a little more or a little less, according to quantity, specification and date of delivery, the latter being in many cases an important consideration. Steel is very scarce, however, and prices cannot be safely calculated upon from one day to another.

Plates.—The demand for Plates keeps up at an extraordinary rate. The local demand is immense, besides which there is a great deal of inquiry from the Northwest, Wisconsin, Minnesota, Iowa and Kansas having all made application for prices on what in the aggregate would be a very heavy tonnage. Mills have too much to do to meet the requirements of their own customers, however, to quote on outside business, so that so far as known no sales have been made to any of the more distant points. Work has been much retarded by the heavy rains, which have done considerable damage to three or four of the leading local mills, and it is feared that the delay in getting to work by some of the mills will cause much disappointment. Prices are a tenth higher than they were a week ago, and at the advance it is very difficult to place orders. Prices for seaboard and nearby points are as follows: Plates, ¼-inch and thicker, 1.65c. to 1.70c.; Universals, 1.65c. to 1.70c.; Flange, 1.75c. to 1.85c.; Charcoal Iron Plates, C. H. No. 1, 2.25c.; Best Flange, 2.75c.; Fire Box, 3.25c.

Structural Material.—Business is very active, but not to the same extent as in Plates. Mills have plenty of orders on their books, however, and with excellent prospects for the spring and summer months there is little doubt that work will be very abundant. Bridge and ship builders and other large consumers have been heavy buyers of Plates, which would seem to indicate that a considerable amount of new business has been closed recently. Prices are firm, and may be a little dearer in the near future, but for the present they are as follows for seaboard and nearby points: Angles, 3-inch and upward, 1.65c. to 1.75c.; less than 3-inch, 1.50c. to 1.60c.; Beams and Channels, 15-inch and upward, 1.65c. to 1.75c.

Bars.—The demand for Bars is only fair, and some of the mills are beginning to run rather short of orders. Prices are nominally unchanged, but desirable specifications meet with favorable consideration, and could probably be done at a little less than the usual asking rates. Scrap and other material is very high, however, and manufacturers will find it difficult to work out a satisfactory margin, unless a readjustment is made between selling prices and cost of production. Quotations for seaboard are as follows: Iron Bars, 1.40c. to 1.50c.; Steel Bars, 1.50c. to 1.60c.

Sheets.—The demand is maintained at the high limits noted for some time past, and is beyond what can be met in reasonably satisfactory time. Prices are, of course, very strong and for best Sheets are quoted about as follows (common Sheets two-tenths less): No. 10, 2.25c.; No. 14, 2.45c.; No. 16, 2.65c.; Nos. 18-20, 3.15c.; Nos. 21-24, 3.25c.; Nos. 26, 27, 3.30c.; No. 28, 3.45c. to 3.50c.

Old Material.—Steel Scrap scarce and firm, and, as a matter of fact, that may be said of all descriptions, although Steel is the leader. Bids and offers are about as follows for deliveries in buyers' yards: Choice Railroad Scrap, $19.50 to $20.50; No. 1 Yard Scrap, $13 to $14; No. 2 Light Scrap, $12 to $13; Machinery Cast, $14 to $14.50; Heavy Steel Scrap, $16 to $16.50; Old Iron Rails, $18 to $19; Old Steel Rails, $16 to $16.25; Wrought Turnings, $10.50 to $11; Cast Borings, $8 to $8.25; Old Car Wheels, $16.50 to $17; Iron Axles, $22 to $23; Steel Axles, $17 to $18.

(By Telegraph.)

Basic Pig Iron is again urgently wanted. A sale is reported at $15 for New Jersey delivery.

Sales of 10,000 tons of Basic just closed at about $14 at furnace for Western shipment.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, Pittsburgh, March 13, 1901.

(By Telegraph.)

Pig Iron.—Bessemer Iron for March shipment is very scarce and has sold up to $16 at Valley furnace, equal to $16.75, Pittsburgh, and in good sized lots. Small lots of 50 to 100 tons have sold at $16.50 at Valley furnace, but for spot shipment, which explains the high price. Bessemer Iron for delivery up to July could be bought at lower prices than the above, probably at $15.50 at furnace. However, there is practically no demand for Iron for forward shipment, as the large consumers are pretty well covered, and the present demand is from smaller consumers who want prompt Iron. The furnaces are going to ship out every ton of Iron they possibly can this month and have the benefit of the high prices. Forge Iron is in fair demand, and is held at about $13.75 at Valley furnace. Southern Forge has sold in this market in large lots at $14.15, delivered. There is a heavy inquiry for Foundry Iron, and we are advised of sales of 5000 or 6000 tons to local consumers. We quote: Standard Bessemer Pig, $16 to $16.50 at Valley furnace for March Iron, and $15.50 to $16 for Iron up to July. The price of Bessemer Iron, f.o.b. Pittsburgh, is $16.75 to $17.25 for prompt Iron, and $16.25 to $16.75 for forward Iron. We quote Gray Forge at $13.75 at Valley furnace, and $14.25 to $14.50, Pittsburgh. No. 2 Foundry is $14.50 to $15, Pittsburgh. We note sales of about 5000 tons Bessemer at $16 at Valley furnace. Also sales of 5000 to 6000 tons of Southern Forge at $14.15, delivered, Pittsburgh. Also sales of No. 2 Southern Iron at $15.40, Pittsburgh.

Steel.—The report that the Billet pool had been dissolved is denied. There is no fixed price on Steel, the mills getting all they can. Billets for prompt shipment are scarce, and are bringing from $22 to $23, Pittsburgh. We note sales of several hundred tons at about $22.50, Pittsburgh.

Muck Bar.—The market is very strong, and we quote Standard grades of Muck Bar at $26.50 to $27, Pittsburgh.

(By Mail.)

The situation in the Iron trade is fully as strong as a week ago, and prices on Bessemer Pig Iron have further advanced. The demand for Iron for prompt shipment is very large, and large Steel interests that were sellers of Iron some time ago are reported to be in the market now as buyers. Prompt Iron is hard to find, and Bessemer for March shipment has sold at $16 at furnace. The Ore Association is in session in Cleveland to-day. Forge and Foundry Iron is very firm, and so is Steel. The market on all kinds of Finished Material is very active, and prices are strong. The mills have probably as much work on their books at this time as at any period during the Iron boom of 1899. It is not believed, nor is it desired, that prices will go as high as they did in that year.

Structural Material.—We note a continued heavy demand, and a very large tonnage is being placed. The leading bridge interest closed some contracts in the past week, involving a good many thousand tons of material. Structural shops all over the country are full of work, and the outlook could hardly be better. Mills are crowded, and there is some delay in shipments. We quote Beams and Channels up to 15-inch, 1.50c.; over 15-inch, 1.60c.; Angles, 3 to 6 inches, inclusive, 1.40c.; over 6 inches, 1.50c.; under 3 inches, 1.40c.; Zees, 1.50c.; Tees, 1.55c.; Steel Bars, 1.40c., half extras, at mill; Universal and Sheared Plates, 1.50c., all f.o.b. Pittsburgh.

Sheets.—Probably never before in the history of the Sheet trade has it been so active at this season of the year as now. Sheet mills have run right through the winter months to full capacity, and are away behind in delivery, and some are out of the market as sellers for delivery this side of July. The leading Sheet interest are running their mills to full capacity, and shipping product as fast as made. We quote No. 27 Black Sheets, box annealed, one pass, at 3.10c., and No. 28, 3.20c. As stated before, it is possible these prices might be slightly shaded by some of the small mills where prompt delivery was not specified. We quote Galvanized Sheets at 70 and 5 per cent. off, f.o.b. maker's mill.

Plates.—There is a very heavy demand for Plates, and two or three of the leading local mills are practically out of the market as sellers for delivery within two or three months. The minimum price of Plates, Tank quality, ¼-inch and heavier, is now 1.50c., base, with the usual differential for higher grades. An excellent demand for Fire Box Steel is reported, locomotive shops all over the country being very busy. The Plate business was probably never in a more satisfactory condition than at present. We have advanced prices $2 a ton, and now quote: Tank quality, ¼-inch and heavier, 1.50c.; 3-16 inch, 1.55c.; under 3-16 inch and above No. 10, 1.60c.; Flange or Boiler Steel, 0.1c. advance over the base of Tank; Marine and Fire Box, American Boiler Manufacturers' Association specifications, 0.2c. advance over Tank; Still Bottom Steel, 0.3c. advance over Tank; Locomotive Fire Box Steel and equivalent specifications, 0.5c. advance over Tank, all f.o.b. Pittsburgh.

Bars.—The market in Iron and Steel Bars is active, and some of the leading Bar mills are practically out of the market as sellers. There is a scarcity of Bars for prompt shipment, some of the mills being 60 days or more behind in deliveries. The agricultural interests are specifying very freely on contracts placed some time since, and in some cases have come in the market and placed further orders. We quote Steel Bars in carload lots at 1.40c., at mill, and 1.45c. in small lots for very desirable orders. It is possible some sellers might name 1.35c., where prompt delivery was not specified. We quote Common Iron Bars at 1.40c., at Valley mill.

Ferromanganese.—We quote 80 per cent. foreign and domestic Ferro at $62.50, delivered at buyer's mill.

Merchant Steel.—There is an active inquiry, and the mills are running to full capacity, with plenty of orders ahead. The tone of the market is firm. We quote Plow Slabs, ¼-inch and heavier, 1.60c., base; Tire, 1.50c.; Toe Calk, 1.75c.; Bessemer Machinery Steel, 1.40c.; Smooth Finished Steel, 1.75c.; Rolled Lay Steel, 2.75c.; Hammered Lay Steel, 3.50c.; Plow Slabs, 1.80c.; Cold Rolled and Cold Drawn Shafting, 55 per cent. off in carload lots, 50 per cent. in less than carload lots, delivered in base territory. Tool Steel, 7c. and upward, according to quality. On Tool Steel freight is allowed east of the Mississippi River. Some of the mills making Tool Steel, and of special brands, are naming lower prices than the leading interest.

Tubular Goods.—There is a good general demand for Tubular goods of nearly all kinds, and the tone of the market is strong. Some of the jobbers are naming slightly higher prices. A large amount of Oil Well Supplies has been shipped from this market to the new oil field

in Texas. Prices to consumers in small lots are as follows:

Merchant Pipe.

	Per cent. Black.	Per cent. Galvd.
⅛ to ½ inch and 11 to 12 inch	61	48
¾ to 10 inch	68½	56

Casing, Random Lengths.

	S. & S.	I. J.
2 to 3 inch	58	53½
3¼ to 4 inch	63	59
4¼ to 12½ inch	65	61½

Casing, Cut Lengths.

	S. & S.	I. J.
2 to 3 inch	53½	59
3¼ inch to 4 inch	59	55
4¼ to 12½ inch	61½	57½

Boiler Tubes.

Steel.	Up to 22 feet. Per cent.
1 inch to 1¾ inch and 2¾ inch to 5 inch, inclusive	68½
2 inch to 2½ inch, inclusive	63
6 inch and larger	62
Iron.	
1 inch to 1½ inch and 2½ inch	49½
1¾ to 2¼ inch	45
2¾ inch to 13 inch	57

It should be noted, however, that prices to jobbers are from 5 to 7½ per cent. less than those given above.

Skelp.—There is a good demand for both Iron and Steel Skelp, and prices on the former are very firm. We quote Grooved Iron Skelp at 1.65c. to 1.70c., and Sheared at 1.70c. to 1.75c. Steel Skelp is still quoted at 1.45c. to 1.50c., f.o.b. cars Pittsburgh.

Iron and Steel Scrap.—The Scrap market is active, and good sized quantities are being purchased at the higher prices. The two leading consumers, Republic Iron & Steel Company and American Steel Hoop Company, are running all their mills to full capacity, and are buying more Scrap than for some time. Prices are firm, and we quote No. 1 Railroad Wrought Scrap, $16 to $16.60 net ton; Busheling Scrap, $13 to $13.50 gross ton; Old Iron Rails, $20 to $20.50 gross ton; Turnings, $7.50 to $8 net ton; Borings, $6.50 to $7 net ton; Heavy Melting Stock, $15.50 to $16 gross ton; Cast Scrap, $14 to $14.50 gross ton; Country Mixed Steel Scrap, $13 to $13.50.

Coke.—Last week was a record breaker in production in the Connellsville region, the output having been the largest of any one week in the history of the Connellsville Coke trade. Of the 21,447 ovens in the region, 19,458 were active and 1989 idle, the output last week having been 225,713 tons. Prices of Coke are firm, and we quote strictly Connellsville Furnace at $1.85 to $2, and 72-hour Foundry at $2.50 a ton. Coke made outside the Connellsville region is bringing higher prices, and Furnace is held at $1.65 to $1.75, and Foundry at $2 to $2.25 a ton at oven.

St. Louis. (*By Telegraph.*)

Office of *The Iron Age*, 1205 Chemical Building, St. Louis, March 13, 1901.

Pig Iron.—Business is holding up nicely considering the recent heavy buying. The majority of present orders are for moderate tonnage, but a sprinkling of heavier buying is also noted. Negotiations are now said to be under way for certain grades of Pig Iron for a car building interest. The trade covered their wants quite freely, but belated buyers are still entering the market. All branches of the Foundry trade were heard from during the rush. There is decided call for prompt shipment Iron and inquiry has lately been heard for Pig Iron to cover wants for the last half of this year. Prices are firm and in some cases higher than quoted below. We quote, f.o.b. St. Louis:

Southern, No. 1 Foundry	$14.75 to $15.00
Suthern, No. 2 Foundry	14.25 to 14.50
Southern, No. 3 Foundry	13.75 to 14.00
Southern, No. 4 Foundry	13.25 to 13.50
No. 1 Soft	14.75 to 15.00
No. 2 Soft	14.25 to 14.50
Gray Forge	13.00 to 13.25

Bars.—Mills say that they are flooded with orders for Bars. Manufacturers are sending in specifications to jobbers and urging immediate deliveries. Certain mills are asking $1 to $2 per ton more for Bars and a bonus has even been paid for much needed sizes. Hoops and Bands are in very good demand. At the advance to 1.70c., St. Louis, for ¼-inch plate, buying has not been checked. Mill prices on Iron and Steel Bars are now 1.55c. to 1.60c., half extras, East St. Louis. Jobbers' prices to-day remain at 1.65c., full extras, carloads, and 1.75c. to 2c. for less than carloads.

Rails and Track Supplies.—Demand for Track Supplies is exceedingly active. The supply of Spikes, Bolts, and even Splice Bars is becoming more limited as the season for active track betterment approaches. We quote Steel Splice Bars, 1.50c. to 1.60c.; Bolts, with Square Nuts, 2.40c.; with Hexagon Nuts, 2.50c.; Spikes, 1.75c. to 1.85c.

Pig Lead.—Missouri brands of Lead are steady at 4.22½c.; Desilverized still 4.32½c. Rather quiet market. Lead Ore remains at $46 per ton.

Spelter.—Inactive Spelter market this week. Consumers are well supplied and producers have output comfortably booked ahead. 3.77½c. is quotable price. Top grade Zinc Ore was sold at $27.50 per ton.

Birmingham.

Birmingham, Ala., March 11, 1901

The market for Iron during the past week was lacking in the snap that characterized it in the immediate past. But the buying was good, and prices were fairly well maintained. Some large interests that had been good buyers added to their line of purchases, and extended the time of delivery, some of them covering well into the fourth quarter of the current year. In some cases they extended into the early part of 1902. This is the main feature of the market, as it indicates confidence in the stability of values. Strong interests were buyers for the deferred deliveries. There was some variation in values. No. 2 Foundry, quoted the preceding week at $11.25, was held by some interests at that price, and good business was refused by them at $11. But their order books were comfortably full, and they were indifferent sellers. Others, differently situated, took the business at $11 for No. 2 Foundry. Six thousand tons in one order was taken on this basis, one-half of it being No. 2 Foundry, and one-half No. 2 Soft Gray Forge, sold at $9.75, $9.85 and $10. Basic Iron is nominal at $11. The sellers are out of the market unless for long deferred deliveries. No. 1 Foundry is $11.75 to $12. The larger sellers report that every indication points not only to a continuance of the present good business, but to an increase of it, and they are not pushing sales or offering inducements in the way of concessions in prices. In Steel the situation continues very favorable. So keen is the demand that the combination prices are no longer a guide as to the market. All the way from $1 to $2 above them has been obtained without unfavorably affecting the demand. The Steel Rail mill is progressing in erection, but failure to deliver their main engine will cause delay in completion of mill, and it will probably be mid-summer before it is completed and ready for operations.

An important change in the *personnel* of the management of the Tennessee Coal, Iron & Railroad Company will be made at the annual meeting of the stockholders this week. James Bowron, who has for so many years been its treasurer and first vice-president, will by his resignation sever his connection with the company. Who will probably be his successor is not yet known here. With his retirement the company loses an official whose long service with it has made him most familiar with its affairs and whose ability none will deny. The change has been determined upon for some time, but the time of its occurrence has been delayed by request. It is understood that the resignation was the voluntary act of Mr. Bowron, and that he will remain here as an official of the Birmingham Trust & Savings Company. A close examination of the affairs of the company and the condition of their properties has been concluded by the chairman of the Executive Committee, who has returned to his post in New York. He had nothing of consequence to say concerning his conclusions to any one here.

Reference has been made to some large deals that were brewing in Ore and Coal lands. It looks now as if one in Coal lands was drawing to a successful issue. The quality involved exceeds 100,000 acres, and Pittsburgh

capitalists, together with some English associates, are credited with being the buyers. Negotiations have been in progress for some months, and since last letter the parties having matters in charge at this end have gone to Pittsburgh for a personal conference and to close the deal. All particulars concerning the matter have been closely guarded, and, so far, very little has leaked out. The transaction, if successful, will be one of the largest in the history of this section.

Negotiations involving a considerable amount of valuable Ore lands are also in progress, but they have not yet reached the stage of definiteness, and, as premature mention might spoil a trade, it is withheld.

There are rumors and rumors afloat of certain combinations to be formed by which certain important Southern interests are to enter into the trust, but those here who are both interested and well informed do not anticipate anything of the kind. It is difficult to see where any such action would benefit either side. Lately we have had visits from financial magnates, experts in Coal and Ore properties and railroad officials of high degree, and gossip is busy with many schemes credited to them. Whatever may be their business, they are keeping their secrets to themselves. But there is a feeling that we are but on the eve of a great development era that will largely add to our wealth, our prosperity and our importance in the commercial world.

Cincinnati. *(By Telegraph.)*

Office of *The Iron Age*, Fifth and Main streets, Cincinnati, March 13, 1901.

The week just past has been an exceedingly satisfactory one in the Pig Iron market, and while the number of large deals was smaller than the week previous, yet there has been a good steady run of trade in from 300 to 1000 ton orders, and the outlook is good for a continuation of the same sort of business. All grades of Iron are in demand and selling well. There is no weak spot in the market, and on that account the situation is a more satisfactory one than at any time in the past six or eight months. There are quite a number of buyers who have held off and appear to be uncertain regarding business about which they were inquiring, but just at present it looks as though they will either have to pay the prices asked or higher ones within the next few weeks, for the situation is decidedly stronger and the tendency upward. A sale of 300 tons of No. 2 Southern Foundry is reported upon good authority to have been made on the basis of $11.50, Birmingham. A sale of Gray Forge by a Virginia furnace was made on the basis of about $9.60, Birmingham, from which it will be seen that the market is in pretty good condition. Freight rate from Birmingham is $2.75 to this point; from Hanging Rock district, $1. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	$14.25 to $14.75
Southern Coke, No. 2	13.75 to 14.00
Southern Coke, No. 3	13.25 to 13.50
Southern Coke, No. 4	12.50 to 12.75
Southern Coke, No. 1 Soft	14.25 to 14.75
Southern Coke, No. 2 Soft	13.75 to 14.00
Southern Coke, Gray Forge	12.25 to 12.50
Southern Coke, Mottled	12.25 to 12.50
Ohio Silvery, No. 1	17.00 to 17.50
Ohio Silvery, No. 2	16.00 to 16.50
Lake Superior Coke, No. 1	15.50 to 15.75
Lake Superior Coke, No. 2	14.50 to 14.75
Lake Superior Coke, No. 3	13.50 to 13.75
Southern Basic	.... to 14.75

Car Wheel and Malleable Irons.

Standard Southern Car Wheel, chilling grades	$18.75 to $19.75
Standard Southern Car Wheel, No. 2	17.75 to 18.75
Lake Superior Car Wheel and Malleable	18.50 to 19.00

Plates and Bars.—Price-lists are practically unchanged, though the market is strong and fairly active. The tendency appears toward higher prices. We quote, f.o.b. Cincinnati: Iron Bars, in carload lots, 1.55c., with half extras; in small lots, 1.75c., with full extras. Steel Bars, in carload lots, 1.52c., with half Steel card extras; Base Angles, in carload lots, 1.65c. to 1.70c.; Plates, 1.70c. for ¼-inch and heavier; Sheets, No. 10, 2.05c.

Old Material.—General conditions are practically unchanged, with a normally active market. Dealers' buying prices per gross ton are, f.o.b. Cincinnati: No. 1 Wrought Railroad Scrap, $15; Cast Railroad and Machine Scrap, $11; Old Iron Axles, $16.75; Iron Rails, $18; Steel Rails, rolling mill lengths, $13; Short Lengths, $12; Car Wheels, $15.

Cleveland.

Cleveland, Ohio, March 12, 1901.

Iron Ore.—A preliminary meeting of the members of the Ore Association was held this week, at which analyses were made and prices were discussed, but nothing of a definite nature was accomplished. The discussion was chiefly along the line of the possibilities of the season, and it developed that all indications are for a very satisfactory amount of business. It is expected that the production will exceed that of last year by at least 2,000,000 tons. This being the case the Ore men are not so much disposed as they might have been before to allow the prices to sag to a rate lower than they have been this past season. Upon this matter, however, the Ore men themselves are not fully decided, and a fuller discussion can only bring out something more definite. Other meetings will be held at intervals in the near future, and it is expected that before the end of the month the prices shall have been agreed upon. A conference between the longshoremen and the Ore dock managers opened in this city yesterday, the aim of which is to fix the wages of the stevedores for the coming season. The first joint conference between the men and the dock managers will be held to-morrow, preliminary discussions having been indulged in hitherto. It is expected that the questions will be decided before the end of the week. It is possible that the longshoremen will agree to accept a slight reduction in wages, seeing the probability of lake freights being very low this year. All discussion of Ore freights for the season has been abandoned for the present. The strike of the marine engineers, that threatens to tie up all the boats until June 1, is preventing any conclusions being arrived at. Boats are being withdrawn from all lines of trade, no charters being made for any purpose. This necessarily brings to a standstill all discussion of Ore rates that would lead to a settlement.

Pig Iron.—The demand for Pig Iron and the scanty supply of it is producing a very strong market. The tendencies are all for higher prices, and these are being obtained, although furnacemen are combatting the influence in the name of prudence. One order of 5000 tons of Bessemer was placed in the Valley this week for $16, which is an advance of $1, and the price was generally accepted. The business done after this sale was large. Some furnaces still have material to sell, but for the most part no large orders can be filled before July 1. Basic Irons are also advanced in price, being quoted at $15.50 in the Valley. Not much is being done with this grade because of the limited supply of it, the full capacity of most of the furnaces having been sold up until July 1. Scotch Irons are also up this week, being quoted at $15 for No. 1 and $14.50 for No. 2. Foundry Irons are quoted on the same basis. Chances for deliveries are better in these grades than in those previously mentioned, although prompt deliveries are practically impossible. All sales are being made in Cleveland subject to the 75c. freight from the Valley.

Finished Material.—As a result of the meeting of the Plate pool all buyers are being met with a demand for higher prices than they have been paying hitherto. All mills have now united in demanding 1.50c., Pittsburgh, or 1.60c., Cleveland, for the material, and even at those prices heavy sales are impossible, the previous orders having been so heavy that very little room is left for new business. Most of the large mills are filled up for several months ahead, and even the smaller ones are claiming that deliveries under 60 days are impossible. Notwithstanding this statement some choice orders are being rushed through by the Otis people in a week or ten days, while one Pittsburgh mill is able to deliver the goods in a week. Billets are also stronger. Chances for obtaining any large quantities are very poor and those which are salable are valuable. It is virtually an impossibility to purchase any Billets in Cleveland

now for less than $23.75, although some of the Valley mills might shade that a little. A short time ago large sales of Structural Shapes were made and the spring business took on boom proportions. While none of these orders have been canceled, it is difficult to get specifications on the old orders, causing some delays. As a consequence the mills fear congested conditions later on. Some sales agents have been talking of higher prices on Beams and Channels, but it is thought that the conditions of the market will not warrant anything of the sort for the time being. The old prices, therefore, of 1.50c., Pittsburgh, on Beams and Channels and 1.40c. on Angles, obtain. Sales this week have been moderately heavy only. A few inquiries appear from the electric lines for Rails, but the steam roads have covered almost all of their needs. Deliveries are now being made quite generally. Bars hold firm at the new price of 1.45c., Pittsburgh, or 1.55c., Cleveland, and the demand is as stiff as ever. The limited capacity of the mills prevents any big business being done. The spring trade seems to have set in with even brighter possibilities than at first appeared. In fact, the Steel trade is at boom hight.

Old Iron.—The Scrap market has felt the exhilarating effect of the briskness in other lines of the industry, and the result has been a shrinking of the supply of material and a general increase in demand for old Irons. A readjustment of prices is possible in the near future. An accurate quotation of the market is almost impossible, but the following figures approximate the situation: No. 1 Wrought, $16.50 net; No. 1 Cast Scrap, $13 net; Old Iron Rails, $21 gross; Old Steel Rails, $16 gross; Car Wheels, $19 gross; Cast Borings, $6.50 net; Wrought Turnings, $10 net.

New York.

Office of *The Iron Age*, 232-238 William street,
NEW YORK, March 13, 1901.

Pig Iron.—The local market is rather quiet, no large sales being reported. A somewhat interesting state of affairs is developing in Spiegeleisen. There appears to be a scarcity of the domestic article, and a number of inquiries are now in the hands of importers for a considerable tonnage. It looks as though business would result. We quote: Lehigh, Schuylkill and Virginia Irons, No. 1, $16.50 to $17.50; No. 2 X, $15.25 to $16; No. 2 Plain, $14 to $14.50; Gray Forge, $14 to $14.50; Tennessee and Alabama brands, No. 1 Foundry, $15 to $15.25; No. 2 Foundry, $14.25 to $14.50; No. 1 Soft, $15 to $15.25; No. 2 Soft, $14.25 to $14.50; No. 3 Foundry, $13.75 to $14; No. 4 Foundry, $13.25 to $13.50; Gray Forge, $12.75 to $13.

Cast Iron Pipe.—The market is quiet so far as large public lettings are concerned. We continue to quote $23 to $24 at tidewater per gross ton.

Steel Rails.—Quite a good run of orders have been placed, some of the trunk lines taking additional quantities. In the aggregate the sales for the week have amounted to 50,000 tons, carrying the total sales for the pool year from October 1 to date up to 1,800,000 tons. We quote $26 for Standard Sections, and $32 to $32.50 for Girder Rails. We quote Spikes, 1.50c. to 1.60c.; Splice Bars, 1.25c. to 1.30c.; Square Track Bolts, 2.05c. to 2.10c., and Hexagon Bolts, 2.15c. to 2.20c., at mill.

Finished Iron and Steel.—The American Bridge Company has taken contracts aggregating about 12,000 tons, which includes a number of bridges for the Lehigh, Pennsylvania and New Haven roads, manufacturing buildings for the Lackawanna Steel & Iron Company at Buffalo, for the General Electric Company at Schenectady, and for the power plants at Niagara Falls and at Seattle. On Plates the cash price has remained nominally the same, but all the mills are asking an advance of 0.1 cent per pound for prompt delivery. Structural Material is firm in price. We quote as follows at tidewater: Beams, Channels and Zees, 1.65 to 1.70c.; Angles, 1.30 to 1.40c.; Tees, 1.65c. to 1.75c.; Bulb Angles and Deck Beams, 1.90c. to 2c.; Universal Plates, 1.68c. to 1.70c.; Sheared Steel Plates are 1.68c. to 1.70c. for Tank, 1.78c. to 1.80c. for Flange, 1.88c. to 1.90c. for Fire Box. Charcoal Iron Plates are held at 2.25c. for C. H. No. 1, 2.75c. for Flange, and 3.25c. for Fire Box. Refined Bars are 1.45c. to 1.50c.; Common Bars, 1.35c. to 1.40c.; Soft Steel Bars, 1.45c. to 1.50c., and Hoops, 1.90c. to 2c., base, on dock.

Metal Market.

Office of *The Iron Age*, 232-238 William street,
NEW YORK, March 13, 1901.

Pig Tin.—Since our last writing the market has declined from day to day, prices receding steadily until 25.80c. was reached on Monday last. Yesterday there was a recovery which was specially strong on spot Tin. This is said to be due to the delay of incoming steamers. At the close to-day the market was quoted 26c. bid and 26.40c. asked for spot. March was offered at 26.10c. and the May figure was 25.75c. The London spot market was quoted at the close to-day £117 10s. and futures were quoted £114 2s. 6d. Thus far this month the arrivals amounted to but 795 tons, of which actually but 100 tons of Straits were available, as the balance was in landing. There are three direct steamers due with about 1500 tons. The holders of spot Tin are strong and they availed themselves of the occasion to squeeze the price to-day. As far as the general position of the article is concerned nothing has happened to really improve the outlook. On March 27 the Trading Company in Holland will sell about 2500 tons of Banca. The unsold stock of Banca is said to be extremely large, amounting to about 6907 tons on February 28, as against 4200 tons for the same period of last year and 3400 tons for two years previous.

Copper.—The market here is very dull and prices are kept nominally the same as before. Lake is quoted 17c. and Electrolytic and Casting are quoted 16⅝c. There was a rather sensationally sharp decline in the London market yesterday, and at the close to-day the market was as low as £69 7s. 6d. for spot and £70 for three months' futures. This is a decline of more than £1 since last week. The prices quoted to-day are the lowest since the beginning of January of last year. It is said to be astonishing that Europe declined so rapidly in face of the firm holders on this side and the small shipments from this side. As previously stated, during January and February the shipments from here were 8660 tons below last year. So far this month we have shipped only 3031 tons, and it looks now as though the decrease in the shipments this month would bring the total decrease for the first three months of this year to fully 18,000 tons. Reports from the Continent, and especially from Germany, indicate a heavy decrease of consumption. Best Selected has declined £1 and is quoted to-day £76 5s.

Pig Lead.—This market is dull and unchanged. The American Smelting & Refining Company are still quoting 4.37½c. for Desilverized, f.o.b. New York, and 4.32½c. f.o.b. St. Louis. In London the market declined almost daily, and to-day the lowest price was reached with £13 8s. 9d. Shipments from this side are said to continue on a large scale. The injunction against the increase in stock of the American Smelting & Refining Company was vacated by Vice-Chancellor Stevens of New Jersey this week. The dissolution of the injunction is not effective until next Thursday, and the plaintiffs were quick to seize the opportunity and appealed the case to-day. Should the stay be granted the case will be reviewed by the Court of Errors in New Jersey. If the stay should be denied, however, the American Smelting & Refining Company can proceed to carry out the consolidation with the Gugenheims on the basis proposed.

Spelter.—The market is very weak and lower. Spot to May is quoted 3.90c. to 3.95c. St. Louis is quoted easy at 3.75c. and the London market has rapidly declined, reaching £16 10s. at the close to-day. This price is equal to 3.57½c. delivered in London. Our exports so far this year have been considerably smaller than they were last. This is a natural sequence to the exceedingly low price ruling in Europe.

Antimony.—The market is lower and weak. Hallett's

has declined to 9c., but Cookson's is still nominally held at 10¼c. Hungarian has also declined and is quoted to-day at 8¾c.

Nickel.—The condition is unchanged, the metal still being scarce at 55c. to 60c. for ton lots.

Quicksilver.—There is no change, prices quoted here are $51 per flask of 76½ lbs. for lots of 50 flasks and more. The London market is unchanged at £9 2s. 6.

Tin Plate.—The demand is characterized as being still active, and prices are unchanged. The activity in buying seems to extend through all branches of the trade. It is not heavy speculative buying, but good, steady ordinary demand. The American Tin Plate Company quote on a basis of $4.19 per box of standard 100-lb. Plates, f.o.b. New York, and $4, f.o.b. mill. Deliveries at these prices can be had until June 1.

Iron and Industrial Stocks.

After the exciting times preceding and following the formation of the United States Steel Corporation there has been a very quiet week. The volume of sales has been small and the fluctuations have been within a narrow range. United States Steel stock has had spurts of activity, but has been fairly steady. Report has it that stock of the constituent companies is being rapidly turned in and that on some issues a majority is even now secured.

	Bid.	Asked.
American Bicycle Company, common	6½	7
American Bicycle Company, preferred	26½	27
American Bicycle Company, bonds	79	80
American Bridge Company, common	42	42½
American Bridge Company, preferred	91	92
American Sheet Steel, common	35⅝	36
American Sheet Steel, preferred	80¼	81
E. W. Bliss, common	130	..
E. W. Bliss, preferred	125	..
Cramp's Shipyard stock	84	..
Diamond State Steel	5⅝	5¾
Dominion Iron & Steel Company	33½	..
Empire Iron & Steel, common	6	10
Empire Iron & Steel, preferred	37	45
National Enam. & St., common	18	22
National Enam. & St., preferred	80	82
New Haven	5	5⅛
Otis Elevator, common	30½	31
Otis Elevator, preferred	92½	93½
Tidewater Steel	5½	5⅝
U. S. Cast Iron Pipe Company, common	4¾	5
U. S. Cast Iron Pipe Company, preferred	30	34
U. S. Projectile	110	..
Va. C. I. & C., stock	3	5
Va. C. I. & C., bonds	36½	39
H. R. Worthington, preferred	112	115
United States Steel, common	38¼	..
United States Steel, preferred	83	..
United States Steel, subscriptions	104	..

Arbitrage Dealings.—The Wall Street *Summary* gives the following explanation of the arbitrage dealings in the new steel stock: "Although two weeks have elapsed since the terms of the steel 'deal' were announced, and arbitraging began between the present stocks and the new stock 'when issued,' there still exists a large apparent net profit in buying steel stocks and selling 'when issued' contracts against them. These arbitrage profits have about all disappeared in Federal Steel and American Steel & Wire common and preferred, Steel Hoop preferred, National Steel preferred and National Tube preferred. Allowing 1 per cent. to cover commissions and interest, the profit in Federal Steel preferred is about 1⅛ per cent., in Steel Hoop common about 1½ per cent., in National Steel about 2 per cent., in National Tube 1⅛ per cent., in Tin Plate preferred ½ per cent. and in Tin Plate common about 1½ per cent. There have been a great many inquiries why these profits should not be taken, especially as there is scarcely a nominal risk attached. In the first place, the records of every 'deal' in Wall Street, where 'when issued' contracts have been involved, show that a slight arbitrage profit has existed up to the last, which represents the element of doubt of the successful execution of the scheme. No failure has ever been made so far in the working out of a plan of this nature. Again, many persons have refrained from arbitraging lest there should be some surprise in the way of interest or dividend disbursement. The principal reason, however, for the arbitrage profit in the present instance is that the arbitrageurs have sold to a standstill. Not less than 200,000 shares of 'when issued' contracts were sold on arbitrage in the first four days, and as the contracts cannot be settled until maturity, it is obvious that the amount has increased daily. There is no doubt that the promoters of the United States Steel Corporation have welcomed and possibly encouraged arbitraging, because every commitment creates another advocate of the consolidation. If the plan should be abandoned, the 'when issued' contracts would be void and their makers would find themselves long of possibly 500,000 shares of steel stocks in a time of great confusion, even panic. Thus there are 10,000 stockholders in favor of consolidation where there is one opposed to it. The United States Steel insiders have been willing to take the other end, as they are confident of a higher market when the new stock has a Stock Exchange market."

Sloss-Sheffield.—The Sloss-Sheffield Steel & Iron Company have issued their first annual report, being for the year ended November 30, 1900. It shows as follows:

Gross earnings from operations		$1,271,513
Operating expenses		48,257
Net earnings		$1,223,256
Less depreciation and renewals		92,847
Balance		$1,130,409
Less bond expenses, taxes, license		29,984
Balance		$1,100,425
Interest on bonds, full year	$202,575	
Dividends paid	351,750	
		554,325
Net surplus		$546,100

The dividends include three quarters on the preferred stock.

Pennsylvania Steel Company.—The annual report of the Peunsylvania Steel Company showed that the output of the Steelton and Sparrow Point works for the year amounted to 529,000 tons of pig iron and 639,000 tons of steel, the total value of which, $22,377,089, was an increase of $5,256,940 in the value of the previous year's output. The financial statement showed gross earnings of $2,809,117, of which $1,528,056 was charged off for interest, dividend on preferred stock and depreciation, leaving net earnings for the year of $1,271,060. Of this $803,755 was expended for additions and improvements and credited to capital account.

A meeting of the stockholders of the Warwick Iron & Steel Company of Pottstown, Pa., is to be called to authorize the issue of a first mortgage of $300,000 at 5 per cent. There is to be a provision by which $15,000 per year is to be added to a sinking fund.

The net profits of the American Radiator Company for the year ending January 31, 1901, were $527,997, as compared with $657,161 during the previous year. The dividends were $210,000 and $157,500, respectively.

Dividends.—The National Steel Company have declared the regular quarterly dividend of 1¾ per cent. on their preferred stock, payable March 30. Books close March 21 and reopen April 1.

The American Steel & Wire Company have declared the regular quarterly dividend of 1¾ per cent. on their preferred stock and a quarterly dividend of 1¼ per cent. on their common stock. The dividends are payable April 2. Books close March 22 and reopen April 3.

The National Enameling & Stamping Company have declared the regular quarterly dividend of 1¾ per cent. on their preferred stock, payable April 1. Books close March 15 and reopen April 2.

The Republic Iron & Steel Company have declared the quarterly dividend No. 7 of 1¾ per cent. on the preferred stock, payable April 1, to stockholders of record March 15.

The Pennsylvania Steel Company have declared a quarterly dividend of 1¾ per cent. on the preferred stock, payable April 15, to stock of record March 30.

The Boston Belting Company have declared the regular quarterly dividend of $2 per share, payable April 1, to stock of record March 16.

The Otis Elevator Company have declared a quarterly dividend of $1.50 per share on the preferred stock, payable April 15 to stockholders of record on March 25.

On the 25th ult. the J. A. Fay & Egan Company paid two dividends of 1¾ per cent. on the preferred stock, being the regular quarterly dividend and a deferred divi-

QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING MARCH 13, 1901.

Cap'l Issued.		Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday	Closing quotations.	Sales
$29,000,000	Am. Car & Foundry, Com..	22¼-22¾	22½-24⅛	24 -24½	24¾-25¾	24 -25¼	24 -24½	24⅛	66,850
29,000,000	Am. Car & Foundry, Pref.§.	73¾-74½	74½-75¼	75 -75½	75⅝-75⅞	75 -75¾	74¾-75⅛	75	11,350
19,000,000	Am. Steel Hoop, Com.....	36 -36¾	36¼-36½	36 -36¼	36 -36½	36 -36⅜	36½-36⅞	36½	11,300
14,000,000	Am. Steel Hoop, Pref.‖...	81½-81⅞	80⅝-81¾	80½-81¼	80¾-81¾	81 -81¼	81 -81¾	81	8,900
50,000,000	Am. S. & W., Com.....	38⅞-39¾	38½-39⅜	38½-38¾	38 -39⅜	38¾-39½	38⅞-39¼	39	24,100
40,000,000	Am. S. & W., Pref.‖.....	95⅞-96⅞	-96	-96	96 -97¼	97 -97¼	97¼-97½	97⅜	9,500
28,000,000	Am. Tin Plate, Com., N. Y.	62 -62⅜	61⅞-62	-61⅝	61¾-62	61¾-62⅛	-62	62	4,200
18,325,000	Am. Tin Plate, Pref., N. Y.‖	101¾-102	101½-101¾	-100½	98½-101	-101	101⅜-102	102	6,000
7,500,000	Bethlehem Iron†.....	.....	-61	-61	-61	61¾-62	-62	...	550
15,000,000	Bethlehem Steel‡‡.....	19 -19½	-19⅛	-19	-19	.....	-18¾	...	1,598
7,974,550	Cambria Iron, Phila.*....	.....	-46½	-46¾	-47	-46¾	-46¾	...	150
16,000,000	Cambria Steel**.....	17¾-17⅞	17⅝-17⅞	17½-17¾	.....	.....	-17¾	...	2,200
11,000,000	Colorado Fuel & Iron.....	43½-46½	45 -45⅞	-45	45¼-45⅝	45 -45½	45 -45¼	45¼	4,500
24,410,900	Crucible Steel, Com.....	.....	-25⅝	.....	.....	.....	.....	...	300
24,399,500	Crucible Steel, Pref.....	.....	.....	83¼-83½	-83¼	-83¼	.....	...	2,600
46,484,500	Federal Steel, Com.....	43¾-44⅝	43⅝-44	43¼-43⅝	43¼-43⅞	43½-43¾	43¼-43⅞	43¼	12,700
53,253,500	Federal Steel, Pref.††.....	88⅜-89¼	89 -89¼	88¾-88⅞	88⅝-89⅜	89 -89½	89¼-89⅞	89⅜	27,074
15,000,000	International Pump, Com..	27½-29¼	29¼-30½	30 -30¼	30¼-30½	30 -30⅛	-30	30	5,500
12,500,000	International Pump, Pref..	.....	78¼-79	-79½	80 -80½	80¾-81	-81½	81½	1,900
11,000,000	International Silver.....	.....	- 7	.....	- 7	- 6⅞	.....	...	400
32,000,000	National Steel, Com., N. Y.	45½-46	45½-45⅞	45¼-45½	45 -45½	45¼-45½	44½-45½	45⅝	13,100
27,000,000	National Steel, Pref., N. Y.‖	101⅞-102⅝	102 -102¼	101¾-102	99½-102	101½-102	101⅝-102¼	102	9,400
40,000,000	National Tube, Com., N. Y.	53½-54	-53	53¼-53½	52¾-53½	53 -53⅞	53 -53½	53½	5,000
40,000,000	Nat'onal Tube, Pref., N.Y.‖	-102½	-102	.....	100⅝-101¼	100 -101½	101¼-102	101⅞	2,225
5,000,000	Penna., Com., Philadelphia.	.....	-66	-66	-66	67 -70	-71	...	500
1,500,000	Penna., Pref., Philadelphia.	.....	-90	.....	.....	-90	-94	...	150
12,500,000	Pressed Steel, Com.....	30 -31½	30¼-33½	33½-36	35½-36¼	35¾-36⅝	-35⅝	35⅝	8,100
12,500,000	Pressed Steel, Pref.§.....	73½-74	73½-74	73 -73¾	74 -74¼	-74¾	74¼-74¾	74¼	2,800
27,191,000	Repub. Iron & Steel, Com..	15¾-17¾	16⅝-17⅞	16¾-17	16¾-17¼	16⅞-17⅛	16⅛-17	17	29,350
20,306,900	Repub. Iron & Steel, Pref.‖	65⅝-68¾	67 -68¾	67 -67¾	67 -67½	67 -67¼	66¼-67	66⅝	33,200
7,500,000	Sloss-Sheffield S. & I., Com.	.....	.....	.....	.....	23 -24	24½-24¾	24½	900
6,700,000	SlossSheffield S. & I., Pref.§	.....	-71	.....	-71	71½-72	.....	...	400
20,000,000	Tennessee Coal & Iron....	49⅜-56	53⅛-55¾	53¾-54¼	53½-55	53¼-54⅞	53 -54	53⅞	66,100
1,500,000	Warwick I. & S. (par $10).	- 7⅛	6¾- 7⅛	.....	.....	- 7⅛	.....	...	950

§ 7 % Non-Cu. ‖ 7 % Cu. †† 6 % Non-Cu. ‡‡ Par $50, $1 paid in.
* Par $50. ** $10.50 per share paid in. † 6% guaranteed by Beth. Steel Co. Late Philadelphia sales by telegraph. ‡ Ex-dividend.

Bonded indebtedness: Am. S. & W., $130,656; Am. Tin Plate, none; Am. Steel Hoop, none; Cambria Iron Co., $2,000,000 6 % debenture 20-year bonds, 1917, payable option 5 years, assumed by Cambria Steel Co.; Federal Steel Co., $9,822,000 Illinois 5 %, $7,417,000 E. J. E. R. R. 5 %, $1,600,000 Johnson 6 %, $6,732,000 D & I R. R. R. 5 %, $1,000,000 2d D. & I. R. R. R. 6 %, $10,000 land grant D. & I. R. R. R. 5 %; National Steel, $2,561,000 6 %; National Tube, none; Tennessee C., I. & R. R. Co., $8,867,000 6 %, $1,114,000 7 %, $1,000,000 7 % cu. pref.; Pennsylvania Steel, $1,000,000 5 %, Steelton, 1st, 1917 $2,000,000 5 %; Sparrow's Point, 1st, 1922, $4,000,000, consolidated, both plants; Bethlehem Iron, $1,351,000 5 % maturing 1907. Interest and principal guaranteed by Bethlehem Steel Co. Republic Iron & Steel, none; Warwick Iron & Steel, none; Colorado Fuel & Iron Co.; Col. Fuel Co. Gen. Mort. 6 % $880,000, Col. Coal & Iron Con. Mort. 6 % $2,810,000, Col. Fuel & Iron Gen. Mort. 5 % $2,303,000. Also outstanding $2,000,000 preferred stock on which dividends have been paid to June 30, 1900. Sloss-Sheffield St. & I. Co., Sloss I. & S. first mortgage 6 %, $2,000,000, Sloss I. & S. general mortgage 4½ % $1,835,000.

dend which was passed in August, 1897. This squares up all dividends due on the preferred stock to date. The capital stock of the company consists of $1,000,000 of 7 per cent. preferred and $1,000,000 of common stock. There are also outstanding $500,000 of first mortgage 6 per cent. gold bonds.

The Sloss-Sheffield Iron & Steel Company have declared a dividend of 1¾ per cent. on the preferred stock.

The Crucible Steel Company of America have declared the regular 1¾ per cent. quarterly dividend on their preferred stock.

Machine Tools for the Mare Island Yard.

On March 26 bids will be received at the Bureau of Supplies and Accounts, Navy Department, Washington, D. C., for the following machinery, which is to be purchased for the Mare Island Navy Yard:

One power bending machine on stand complete.

One geared power punch.

One iron frame dimension planer.

One motor driven full universal 6-inch radial drill.

One motor driven shaper.

Three motor driven water tool grinders.

One hydraulic plate bending machine.

Four upright drill presses sliding head, to drill to center of 25 inches.

Two automatic knife grinders, one universal shears, motor driven.

One quick action punch, motor driven.

One automatic cross cut and rip circular saw sharpener.

Two cross compound two-stage fork frame Corliss steam valve fly wheel air compressors, with mechanical moved air valves.

One upright drill press, sliding head, to drill to center of 43 inches.

One boiler, vertical fire tubular, with mountings.

One horizontal, duplex, double acting, compound air and circulating twin, simple, or cross compound condensing steam driven pump for surface condenser.

One horizontal duplex, double acting, outside center packed plunger, tandem compound, condensing, steam driven boiler feed pump.

The New York Machinery Market.

Office of *The Iron Age*, 232-238 William street.
NEW YORK, March 13, 1901.

Little has transpired during the last week that is of especial importance. The market, generally, was very quiet. No large new projects were reported and ordinary business was not quite as active as during the preceding week. The market is, however, still in a good condition, as far as values are concerned. No further information was to be had regarding the progress of the several large deals which are pending and have been before the trade for some time.

Machine tool merchants have been receiving considerable business quite recently from various automobile manufacturers. While the trade are rather reticent regarding this business, owing to the keen competition displayed in obtaining the orders, we were enabled to ferret out several of them.

The most important new motor vehicle plant now under way is being built at Bound Brook, N. J. The style of the concern is the Pierce Electro Vehicle Company. They will build an electric carriage. The company are financed by Dr. Pierce of Buffalo, who has extensive real estate holdings in Bound Brook. He is also heavily interested in the American Engine Company of that city. The company are now purchasing their equipment of machine tools. Several orders have already been placed.

Lewis Nixon, of Elizabethport shipbuilding fame, is now interested in an automobile company. It is the United States Long Distance Automobile Company. They have acquired the plant recently built at Pacific avenue, Jersey City, by the Manhattan Oil Motor Company. We are informed that this plant was sold at auc-

tion a few days since for $40,000. It represented an outlay of about $200,000, and machinery experts say that it is one of the finest plants to be seen hereabouts. The new company, it is said, will pursue an aggressive policy and intend not only to operate the plant actively, but to install additional machinery, which may be required in producing the automobiles.

The Bell Electric Motor Company, who have held forth at 115 Bleecker street, New York, have found it necessary to expand beyond the limitations of their old plant. They are consequently moving to more commodious quarters at 197 Wooster street, and are purchasing a nice lot of machine tools to fill out the new plant. An order for milling machines and small tools was given to the Brown & Sharpe Mfg. Company.

Considerable new machinery is being purchased by the Morris Electric Company, who have been arranging for several months to build a new plant at Ampere, N. J. Their offices are located at 15 Cortlandt street, New York, and their factory is located on West Twenty-seventh street, New York. The company are at present engaged in equipping the new electric street railway being built at Havana, Cuba. The new plant, which will now be built as rapidly as possible, will contain all modern machinery requisite in the manufacture of electrical specialties. There is talk of enlarging it within a short time so that cars can be built there as well. The contract for the main building has just been awarded to the American Bridge Company. The building will be 50 x 100 feet. William Denshop of 150 Nassau street, New York, has been retained as architect.

One of the most important contracts which has recently been awarded for water tube boilers was captured by Thayer & Co., Incorporated, of 39-41 Cortlandt street, New York. The order calls for 16,000 horse-power of Cahall horizontal boilers. They are to be installed in the new plant which is to be built on the Brooklyn water front by the Brooklyn Heights Railroad Company. Thayer & Co. also received an order for a 6000 horse-power plant to be erected for the Citizens' Light & Power Company of Rochester, N. Y.

We are informed on good authority that the Jersey City, Hoboken & Paterson Street Railway Company of Hoboken, N. J., are about to double the capacity of their high tension plant at Secaucus, N. J. They are about to extend their lines through Hackensack, N. J., and a total distance of about 12 miles. Plans are now being drawn for the work.

At the West Hoboken car shops of the same company, which are located on Clinton avenue and Spring street, Hoboken, a large equipment of machine tools will be installed in a new repair shop.

Contracts for the piping which will be used in fitting out the new power stations of the Manhattan Elevated Railway Company and New York Electric Light, Heat & Power Company have been awarded to S. J. McLeod of Chicago.

Charles H. Paine of 85 Liberty street, New York, has secured for the Taunton Locomotive Mfg. Company the contract for the feed water heaters to be installed in the new Waterside station, which is now under construction by the New York Electric Light, Heat & Power Company. The apparatus will consist of 16,000 horse-power of Wainwright even flow heaters, divided into four units. They will have the special feature of corrugated copper tubes.

The order for the stacks to be employed at the new power station which is to be built at Sydney, N. S. W., by the Sydney Government Tramways was awarded to the Coatesville Boiler Works of 141 Broadway, New York. There will be four steel stacks, each being 125 feet high. This is doubtless the largest order for steel stacks ever received in this country from Australia.

A great new chemical plant is to be built at West Side avenue, Jersey City, N. J., by the Mutual Chemical Company of that place, whose plant was recently demolished by fire. Rough drawings for the new plant are now being prepared by Dr. Kaufmann, who is acting in the capacity of engineer for the company. It is expected that fully a year will be consumed in the building of the new plant, as it is to be a very large one. Besides a great boiler plant with all modern economical apparatus, a large amount of special machinery will be required. A machine shop of good proportions will also be necessitated, as much of the machinery required is of a nature which requires special building by the company. The great plant, which formerly occupied a large site at West Side avenue, has been totally destroyed.

The Grasselli Chemical Company of Cleveland, Ohio, are building a new plant at Tremley, N. J., and are purchasing the machinery necessary in its equipment. They have just awarded a contract to the Coatesville Boiler Works for the equipment of tanks and some special chemical manufacturing machinery.

The Paterson and Passaic Gas & Electric Company of Paterson, N. J., are arranging for a 1000 horse-power increase of their power plant. The engines and boilers have not as yet been contracted for. Mr. Brock is interested.

An order has been given to the Fuel Economizer Company of 74 Cortlandt street, New York, for a large economizer. It will be of 1500 horse-power and is to be erected at the new water works station which is being built at Little Falls, N. J., by the Passaic Water Works Company.

Plans are being drawn at the offices of Henry Klemm of 240 Market street, Newark, N. J., for a new white lead plant which is to be erected at Newark, N. J., on a site not definitely decided upon. The plant is to be built by the New Jersey White Lead company, who are an offspring from the Bunn White Lead Company of Peoria, Ill. Joseph Hensler, Jr., of Newark, N. J., is the principal stockholder in the New Jersey Company. C. H. Bunn of Peoria, Ill., is the practical head of the new concern. The company have been capitalized at $1,000,000, and chartered in the State of New Jersey. The new plant is to have an initial capacity of 8 tons per day, but much larger results are anticipated as the works are increased. The machinery is all to be purchased. The company will produce white lead and litharge under a new and patented process. It is claimed that the white lead can be produced in 24 hours without the use of acids or electricity.

We are informed that the lowest bid received by the municipality of Trenton, N. J., for the 15,000,000-gallon crank and fly wheel pumping engine was submitted by the Barr Pumping Engine Company. The price named was about $68,000.

Sanderson & Porter of 31 Nassau street, New York, are building a large hydraulic power station at Putnam, Conn., for the New York, New Haven & Hartford Railroad.

Edward J. Etting, manufacturers' agent, with principal offices at Philadelphia, Pa., has opened an office at 39 Cortlandt street, New York city. Among the concerns who will be represented are: Whiting Foundry Equipment Company, Chicago, Ill., manufacturers of electric and hand power traveling cranes, compressed air, jib and hydraulic cranes, and Whiting cupola, air hoists, tumblers, ladles and a general line of foundry equipment; Henry E. Pridmore, Chicago, Ill., manufacturer of the Pridmore molding machine for molding duplicate castings in both iron and brass; Maryland Car Wheel Works, Baltimore, Md., manufacturers of electric and mining car wheels, passenger, freight and engine wheels; Barnard & Leas Mfg. Company, Moline, Ill., manufacturers of the magnetic separator for separating iron from cupola and foundry waste, metals, &c.; Standard Pneumatic Tool Company, Chicago, Ill., manufacturers of the Little Giant hammers, drills and pneumatic tools. Union Mining Company, Mount Savage, Md., manufacturers of Mount Savage fire brick.

At the annual meeting of the stockholders of the Tennessee Coal, Iron & Railroad Company, at Tracy City, reports from President Baxter and Treasurer Bowron were read, and new directors were elected as follows: D. H. Bacon, Guy McCoy, Edward Graves of New York City and Walter Perry of Birmingham, Ala., replacing D. J. McComb, James Bowron, Col. A. M. Shook and W. S. Gurnee of New York.

Andrew Carnegie has sailed for Europe, his plan being to go to Cannes first for a few weeks.

The Chicago Machinery Trade.

Office of *The Iron Age*, 1205 Fisher Building, Chicago, March 11, 1901.

S. J. McLeod, dealer in pipe and fittings, Chicago, has been awarded contracts for the piping for the power houses for the Manhattan Elevated Railway and the New York Gas, Electric Light, Heat & Power Company, New York. These two power plants are the largest that have ever been built and will be operated by an aggregate horse-power of 200,000. The piping contracts are the largest of the kind ever placed with a single company and will involve hundreds of thousands of dollars. Mr. McLeod now occupies the four-story building located at Desplaines and Fulton streets, Chicago, and has under consideration the opening of a plant as large as the Chicago one at New York. Besides the contracts named he has closed contracts for piping the power plants of various railroads at Bloomington, Ill.; Hannibal, Mo., and Milwaukee, Wis.

The T. L. Knutson Machinery Mfg. Company, 71 and 73 West Adams street, Chicago, have installed considerable new equipment, including a large milling machine and several drill presses. They have just secured a contract for building additional machinery for the Art Wall Paper Mills of Chicago.

O. H. Davison, formerly vice-president and general manager of the Maywood Foundry & Machine Company, Maywood, Ill., has bought the plant of the MacHugh Foundry Company, situated at 103 to 109 West Monroe street, Chicago. The foundry will be repaired, several new machines, including a crane, will be installed, and a large force of molders will be employed at once.

The Witte Iron Works, Kansas City, Mo., are equipping their shops with new tools, among which is a large planer, which have been purchased from Chicago machinery houses.

T. S. Catmur, consulting engineer of C. Burton Griffiths & Co., London, England, who was in Chicago last week, reports that American machinery is having an increased demand in Great Britain. His firm are agents for a number of large American machinery manufacturers, and they intend to have an exhibit at the coming Glasgow International Exposition, which will open at Glasgow in April. Among the various exhibits will be one showing in operation the Maywood pneumatic sand rammers and the Maywood molding machines, manufactured by the Maywood Foundry & Machine Company, Maywood, Ill.

The Winslow Elevator & Machine Company, 96 to 100 North Clinton street, Chicago, have secured a contract for two electric passenger elevators and one electric freight elevator for the building being erected for the Union League Club of Spokane, Wash.

The Solid Steel Tool Company, 64 and 66 South Clinton street, Chicago, have just completed the installation of several large tools and will increase their force of men. They have closed excellent contracts with railroad companies for railroad tools and nut locks.

Ranier & Williams, 69 South Canal street, Chicago, dealers in second-hand engines and pumps, report that the business in February exceeded that of the same month last year. Among recent shipments were five pumps to Swift & Co., Chicago and Kansas City; a 200 horse-power Buckeye automatic engine to the Illinois Steel Company, at Chicago; a 50 horse-power boiler to Kankakee and several large pumps to various places in the South.

The Otto Gas Engine Works, 360 Dearborn street, Chicago, report that the present gas and gasoline engine trade is the best in the company's experience. Among recent shipments are two large pumping engines with all appliances to the Southern Indiana Railroad Company, two large pumps to the Monon Railroad, four gas engines to various parts of Chicago, a 20 horse-power gas engine to Iowa, one 40 and one 60 horse-power to Fort Wayne, Ind.; a 30 horse-power special electric engine to Louisville, Ky.; two carloads of gas engines to Milwaukee and a complete electric light plant for the Chicago & Erie Railroad.

The Stillwell-Bierce & Smith-Vaile Company, 311 Dearborn street, Chicago, report a steady demand for their line of tanks, pumps and compressors. They have just received an order for a large air compressor for handling 6,000,000 gallons of water in 24 hours from artesian wells on the air lift system for Chicago Heights, Ill., and a large triplex pump for Swift & Co., St. Joseph, Mo.

The Nordberg Mfg. Company, Milwaukee, Wis., have just placed a large order for machine tools with the Niles Tool Works Company. The order amounts to over $40,000 and is said to be the largest recently placed in Chicago.

Frank Kempsmith, owner of the Kempsmith Machine & Tool Company, Linus and Woodward streets, Milwaukee, Wis., has sold his plant to the Kempsmith Mfg. Company, Milwaukee, of which Howard L. Browning is president and Franz Wollaeger is secretary and treasurer. The works will be operated at the same location as heretofore.

The G. J. Bremer Machine Company, Kalamazoo, Mich., recently shipped a double punch and shear machine to the Ornamental Iron & Wire Company, Chattanooga, Tenn. This was the largest tool of its kind ever made in Kalamazoo. The company are also putting on the market a new style milling machine and contemplate the manufacture of a full line of machine tools.

Trade Publication.

Standard Lists and Diagrams of Shapes.—Jones & Laughlins, Limited, Lake and Canal streets, Chicago, have issued a revised edition of their useful publication for users of iron and steel, which reproduces in convenient shape the standard lists. To these lists 57 pages are devoted out of a total of 162, the remaining pages giving a great variety of useful information to architects, contractors, builders and other users of steel shapes. The volume is of pocket size and is substantially bound.

Information Wanted.—A correspondent desires to know the names of manufacturers building suitable tools for turning trolley wheels for electric railways.

Who produces chewing gum machinery ?

A plan is on foot for the reclamation and adaptation to useful purposes of the Hackensack meadows in New Jersey. About 3000 acres of the meadow land between the Passaic and Hackensack rives have been bought by a syndicate of New York business men, who are said to have the backing of strong London capitalists. It is proposed to reclaim the land and make it ready for the location of factories and warehouses at a cost of some $2,000,000. David L. Meyer of New York was the agent of the syndicate in the purchase deal. It is understood that a company will be formed with large capitalization, and that the scheme embraces the building of docks, cold storage plants and large stockyards, with abattoirs and packing houses. When carried out, the plan, it is urged, will afford great relief to the overcrowded shipping and storehouse districts in the lower part of New York City. Congress will be asked to provide funds for deepening the Hackensack and Passaic rivers and the channels of Newark Bay and the Staten Island Kills, and it is intimated that the Lehigh Valley and other railroad companies are likely to participate in the scheme.

Charles F. Roth, Ironton, Ohio, who recently applied for a patent on a new design of wire nail machines, advises us that he is going into the manufacture of shoe nails and tacks of all kinds. Mr. Roth states that he is in the market for some second-hand cut nail and tack machines, and would be pleased to receive inquiries of the trade in regard to these.

The committee appointed by the British Admiralty to consider the question of the employment of Belleville boilers in the navy have reported against that style of boiler, and recommended that no more of them be used except in the cases of ships under construction, where a change would delay the completion of the vessels.

HARDWARE.

THE organization of the NATIONAL RETAIL HARDWARE DEALERS' ASSOCIATION, which has been consummated, as announced in the following columns, is an event of some significance. It indicates the progress that is making in the direction of securing united action by retail merchants for the advancing of their interests. The organization will emphasize the position occupied by retail merchants and the recognition which should be given to them by both jobbers and manufacturers. There will be, it is safe to say, a readiness on the part of both of these classes to meet the reasonable views of the retail merchants and to conserve their interests as far as possible. Some of these have perhaps been overlooked in the past, but they will be made more prominent hereafter by means of the organization which is now beginning its work, and the various State associations having similar objects.

The little attention given to their show windows by some merchants, in other respects enterprising and painstaking, is perhaps in some cases to be explained by the doubt in their minds as to the usefulness of window display. This is a subject on which we have recently received expressions from the trade throughout the country, and it is interesting to note that a very great majority of merchants are emphatic in their statement that windows rightly used are a most efficient and economic means of attracting customers. Extracts from some of these letters are given in the following pages. A few houses who express themselves in doubt as to the usefulness of this means of securing the public attention usually explain their experience or opinion as arising from something exceptional in the circumstances or in the character of their business. There is, on the whole, substantial uniformity in the judgment of the trade that the subject is of such practical importance as to justify the best attention to it and the adoption of careful and up to date methods.

The Opportunity of the Retailer.

In a previous issue we have indicated the problem which confronts the Hardware dealer as the result of the changed conditions which menace his business by decreasing the demand for those articles which largely constitute his stock in trade. To the list of these untoward agencies—namely, the new inventions which displace old items of Hardware, the substitution of machinery for hand work, and the extensive use of iron and steel in place of wood—must be added that downward tendency in price which operates steadily and, on the whole, constantly, despite occasional and abnormal flurries and upheavals. The result of this latter tendency is to force the Hardware dealer to sell more goods in tonnage in order to maintain even the same volume of business in dollars and cents. Meanwhile the increase in expense goes on unceasingly, and it becomes apparent that there is no such thing as standing still to a business of any moment, that there must either be expansion or retrogression.

The problem, therefore, is as to the direction and nature of such expansion, and it early becomes apparent that an increase in the output is much more easily obtained through additions of new goods than swelling the sales of those already handled, so that an increase in assortment is certainly the most feasible plan, since it moves along the lines of the least resistance. To this must be added the fact that the expense of handling any new line is in inverse ratio to the number of lines already handled—or, in other words, the house selling one line of goods can rarely hope to compete successfully with another house carrying not only the goods in question, but a dozen other lines besides. The Hardware dealer carrying Cutlery, Hardware, House Furnishing Goods, Sporting Goods, Tinware, Bicycles, Paints, Oils and the like can usually sell them cheaper, and still with profit to himself, than can the dealer who confines himself to one or two of these items. Such an expansive course is strictly along the lines of common sense, because the Hardware business lends itself more readily and naturally than other business pursuits to the addition of many new and kindred lines. Space does not now permit even a general mention of the numerous additions which are both natural and germane, but a study of the subject is worthy the attention of every progressive and alert Hardwareman who wishes not only to hold but to increase his business, since he has but to take advantage of those new lines which are naturally drifting into his hands.

Among the most fruitful resources for new business is the increasing complexity of modern life and that growth in wealth which has made the luxuries of one generation the necessities of the succeeding one. It is within a decade that Screen Wire Cloth came into general use. Washing Machines and Lawn Mowers are going through the same experience. Each day adds to an already long list of such items, but their principal value to the Hardwareman lies in the fact that they are essentially articles of utility to a convenience loving generation and that they naturally fall within his province.

Hardware is one of the most progressive of all business pursuits, because it relates to the handling of a multitude of new inventions for the every day wants of life. If some of these inventions seem at first to strike at old established items in the Hardware lines, as in the case of the Bicycle and the electric car, then this is all the more reason that the Hardwareman should "spoil the Egyptians" and seize these new articles for his own profit, rather than allow them to develop into separate channels. Usually, too, the new invention creates more business than it displaces.

While, as we have seen, the natural tendency of events is gradually to decrease the trade along strictly Hardware lines, yet the action of these same forces offers to the Hardware dealer such new fields as much more than compensate for those things that are taken away. These new fields are numerous and diversified and at the same time they are germane to the Hardware trade and within natural reach of the dealer. If the dealer be content simply with the old things as he has always known them, then he can expect no better fate than to see his profits disappear and his business dry up. On the other hand, if he is alert and aggressive and realizes the advantages of new opportunities and a constantly increasing assortment, then he has the promise of a future quite as bright as that accorded in any line of business.

Condition of Trade.

During the past few weeks the volume of business has been such that manufacturers in a good many lines have found the demand taxing their capacity, and as a result there is beginning to be complaint of delay in executing orders. This applies especially to the heavy lines, but a similar condition prevails in some other branches. The difficulty which manufacturers are beginning to experience in obtaining material for their products aggravates the matter somewhat. This condition of things coupled with the strength of the Iron market gives a strong tone to prices, especially in the cruder and heavier goods, and has also a general effect on miscellaneous articles, which feel the influence of the increased cost of the raw material. Advances are accordingly being made from time to time, more frequently in the way of withdrawal of extreme discounts than in the open announcement of higher prices. There has of late been more evidence of a disposition to buy in excess of early needs than for some time, and something of a speculative tone has thus shown itself, but as a rule while goods are bought liberally it is in expectation that they will be disposed of during the season, whose volume of trade promises to be large. Export business shows little sign of falling off in its aggregate. While certain lines are feeling the effect of influences which interfere with their going out as freely as formerly there are other lines which are taking their place, and on the whole there is no doubt a steady gain in the foreign sale of Hardware and related products.

Chicago.

(By Telegraph.)

The local Hardware trade is reported to be active beyond anything previously experienced. Retailers are not only buying very freely but numerous new stocks are being ordered. One house at one time the past week had six new stocks in process of filling. Jobbers are so overwhelmed with business that they are compelled to work their forces at night, notwithstanding increased preparations made for this year's trade which had been expected to be ample to meet such contingencies. This condition of affairs prevails notwithstanding great difficulty in both receiving goods from factories and making shipments to customers, railroads being crowded with freight and short of cars, making shipments from factories exasperatingly slow, while the same conditions hamper the deliveries to the trade. Some houses report advance orders running much in excess of anything previously known. Dealers are now placing orders for shipment not only during the summer months, but for next winter's goods for delivery in September and October. Heavy Hardware jobbers report their trade running into large figures. They not only have a heavy demand for Iron and Steel but the trade in Carriage Materials and Wagon Stock is exceptionally active. The large wagon builders are purchasing freely from jobbers' stocks.

St. Louis.

(By Telegraph.)

Trade in Hardware lines is remarkably active and at the ruling prices business is secured without any unusual effort. It is reported that in many articles the trade are more anxious to get the goods than to discuss prices. Voluntary bids have been received at advanced prices for more prompt deliveries than could be had in the ordinary course of business. Goods next to raw material have increased in value and prices on others are hardening. A marked exception is the case of Axes, which are nominally lower. Attention is directed to the growing demand for Lawn Mowers and the fact that the better grades are being sold is commented on. The building outlook is clearer locally. All the trades affected by building activities are bracing up in expectation of a lively movement to provide improvements for the Louisiana Purchase Exposition period. City as well as country buying of Builders' Hardware is very good. The demand for cheap Locks is reported as having been exceptionally strong and equal attention has been paid to the better grades of Builders' Hardware. An extensive trade is also being done in Carpenters' Tools. The heavy demand for Wire products is without change. Heavy Hardware jobbers have had a strong run of orders, which have been steadily increasing in number. Iron and Steel is being freely bought. Wagon Wood Stock is said to be scarce and stocks rather broken.

Notes on Prices.

Wire Nails.—No change is to be noted in the market for Wire Nails. An excellent demand is reported and prices have a strong tone. Some in the trade are apparently anticipating an advance. Quotations continue as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots	$2.30
To jobbers in less than carload lots	2.35
To retailers in carload lots	2.40
To retailers in less than carload lots	2.50

New York.—A good demand at unchanged prices characterizes the New York market for Wire Nails. Quotations are as follows:

To retailers, carloads on dock	$2.53
Small lots at store	$2.55 to 2.60

Chicago, by Telegraph.—The demand shows no sign of cessation. Manufacturers are surprised at the continued stream of business which they are receiving, as they are advised that, notwithstanding the heavy purchases made during the past three months, the stocks of Nails in jobbers' and retailers' hands are light. This promises a continued good demand during the spring months. Their operations are hampered greatly by the lack of cars in making shipments. All factories are falling behind in shipments on this account as well as the heavy demand. Jobbers report a sustained volume of business from their trade, which is running up to as large a volume as ever before known at this time. Carload lots are held at $2.45 and small lots at $2.55, with an occasional concession to $2.50 to the best traders.

St. Louis, by Telegraph.—Tonnage of Wire Nails covered during the week has kept up with the recent heavy average. The buying movement bears no speculative marks, but is rather for legitimate needs. Prices are firmly held. The price to retailers in carload lots is $2.50, smaller lots being quoted at $2.55.

Pittsburgh.—There is some complaint of tardy delivery in Wire Nails, due to extraordinarily heavy demand. The mills are running to full capacity, but are unable to get out Nails as fast as wanted. Some of the Wire Nail interests are said to be so crowded with orders that they are not soliciting new business The tone of the market is very firm and unofficial reports are that prices may be advanced about March 15. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots	$2.30
To jobbers in less than carload lots	2.35
To retailers in carload lots	2.40
To retailers in less than carload lots	2.50

Cut Nails.—Trade in Cut Nails is generally satisfactory, and manufacturers are busy on orders which, while perhaps not large, are numerous enough to aggregate a large quantity of Nails. Quotations continue as follows, f.o.b. Pittsburgh, plus freight per manufacturers' rate book, from which actual freight is deducted by purchaser; terms 60 days, or 2 per cent. off in 10 days:

Carload lots	$2.00
To jobbers in less than carload lots	2.05
To retailers in less than carload lots	2.15

St. Louis, by Telegraph.—The smaller sizes of Cut Nails are having the usual sale. The principal nearby

mill is in active operation. Quotations made vary from $2.35 to $2.45, base.

Pittsburgh.—A very satisfactory amount of business is being placed in Cut Nails, and the tone of the market is strong. To jobbers, prices are on carload lots $2, and on less quantities $2.05, f.o.b. Pitsburgh, plus the sixth-class rates of freight contained in the "melon-colored" rate book, less actual freight rates. To small dealers and consumers $2.15 rates, f.o.b. Pittsburgh, plus the fifth-class "melon-colored" rates, less the actual current rates; terms 60 days, less 2 per cent. for cash in 10 days.

Barb Wire.—An excellent demand is reported for Barb Wire, and manufacturers are considerably behind in filling the large and frequent orders coming to them. The tone of prices is naturally strong, and an advance by the manufacturers would not astonish some in the trade. Quotations are as follows, f.o.b. Pitsburgh, 60 days or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots, Painted	$2.60
To jobbers in carload lots, Galvanized	2.90
To jobbers in less than carload lots, Painted	2.65
To jobbers in less than carload lots, Galvanized	2.95
To retailers in carload lots, Painted	2.70
To retailers in carload lots, Galvanized	3.00
To retailers in less than carload lots, Painted	2.80
To retailers in less than carload lots, Galvanized	3.10

Chicago, by Telegraph.—A phenomenal demand is reported for Fencing of all kinds. The orders for Barb Wire are running in excess of expectations, not being cut down as might have been supposed by the large volume of business being done in Woven Fencing. The leading manufacturers are fully 30 days behind in filling orders. Carload lots are held at $2.75 for Painted and $3.05 for Galvanized. Less than carloads are quoted at $2.85 and $3.15 respectively, with shading of 5 cents to best buyers.

St. Louis, by Telegraph.—The independent producers of Barb Wire are filled up with orders and the demand promises no immediate curtailment. The large mills are turning out an enormous tonnage, but orders continue to draw heavily on the output. Painted, in carload lots to retailers, is quoted at $2.80; smaller quantities, $2.85. Galvanized is 30 cents higher.

Pittsburgh.—There is a heavy demand for Barb Wire, and in some cases shipments have not been as prompt as desired by customers. The tone of the market is strong, and an advance in prices before long would not be a great surprise to the trade. For domestic trade we quote: Galvanized Barb Wire, $2.90, in carload lots to jobbers, and Painted $2.60. Terms, 60 days net, 2 per cent. discount for cash in 10 days, f.o.b. Pittsburgh.

Plain Wire.—The call for Plain Wire is such as to overtax the capacity of the mills. The market is characterized by a strong tone. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off for cash in ten days:

	Base sizes. Plain.	Galv.
To jobbers in carload lots	$2.25	$2.65
To jobbers in less than carload lots	2.30	2.70
To retailers in carload lots	2.35	2.75
To retailers in less than carload lots	2.45	2.85

The above prices are for the base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the advances indicated in the following table:

Plain Fence Wire Advances (Catch Weights).

Nos.		Galvanized.
6 to 9	Base	$0.40 extra.
10	$0.05 advance over base	.40 "
11	.10 " " "	.40 "
12 and 12½	.15 " " "	.40 "
13	.25 " " "	.40 "
14	.35 " " "	.40 "
15	.45 " " "	.75 "
16	.55 " " "	.75 "
17	.70 " " "	1.00 "
18	.85 " " "	1.00 "

For even weight bundles, 50 pounds or over, 5 cents per bundle advance on above.

Chicago, by Telegraph.—The situation is unchanged, the demand being heavy and factories falling behind in making deliveries on contracts. Carload lots are still held at $2.40, base, and small lots from stock at $2.50, with an occasional shade to $2.45.

Pittsburgh.—The jobbing trade are placing orders very freely, both on account of heavy demand from small dealers and also because of a possible advance in prices. For domestic trade we quote:

	Plain.
To jobbers in carload lots	$2.25
To jobbers in less than carload lots	2.30
To retailers in carload lots	2.35
To retailers in less than carload lots	2.45

Galvanized Wire up to No. 14 is 40 cents advance on Plain; Nos. 15 and 16, 75 cents advance, and Nos. 17 and 18, $1 advance. Terms are 60 days net, with 2 per cent. off for cash in 10 days, f.o.b. Pittsburgh.

Wrought Iron Pipe.—The most noticeable phase of the Wrought Iron Pipe market this week is the withdrawal practically of all options on deliveries or shipments after April 1. The local jobbing trade has advanced prices 2½ per cent. upon the prices quoted last week. There is a noticeable scarcity of several sizes and an extra 5 per cent. is being asked and very readily got for those sizes most in demand. Up to the present writing none of the manufacturers have announced new prices.

Cast Iron Sinks.—The market for Cast Iron Sinks, square, half-circle and corner, Sink Backs, Legs and Brackets, has stiffened up considerably since the 1st inst., owing to the efforts of the manufacturers to bring about an understanding in regard to prices to the jobbing trade. It is said the recent quotations on Sinks are much lower than the cost to manufacture, and that if the several makers persist in filling orders at these prices it will be at a loss.

Screws.—The condition of the Screw market remains substantially as described in our last issue. One or two other manufacturers have adopted the base of 87½ per cent. discount on Flat Head Iron Screws, as announced at that time, but others are adhering to the former base of 90 per cent. Among these are the American Screw Company, Providence, R. I., who desire us to state that they are maintaining the following discounts as per their discount sheet February 1:

Iron Bright, Flat Head	90 %
Iron Bright, Round and Oval Head	87½ %
Iron Blued, Flat Head, add 5 % to net amount of invoice	90 %
Iron Blued, Round Head	87½ %
Brass, Flat Head	87½ %
Brass, Round and Oval Head	85 %
Iron Bright, Fillister Head	85 %
Iron Felloe	90 %
Iron Drive	90 %
Iron Japanned, Flat Head	85 %
Iron Japanned, Round Head	82½ %
Iron Tinned, Flat Head	85 %
Iron Tinned, Round Head	82½ %
Iron Bronzed, Flat Head	85 %
Iron Bronzed, Round Head	82½ %
Iron Brass Plated, Flat Head	85 %
Iron Brass Plated, Round Head	82½ %
Iron Copper Plated, Flat Head	85 %
Iron Copper Plated, Round Head	82½ %
Iron Nickel Plated, Flat Head, Burnished	80 %
Iron Nickel Plated, Round Head, Burnished	80 %
Iron Silver Plated, Flat Head, Burnished	80 %
Iron Silver Plated, Round Head, Burnished	80 %
Iron Silver Plated, Flat Head, not polished	80 %
Iron Silver Plated, Round Head, not polished	80 %
Brass Nickel Plated, Flat Head, Burnished	80 %
Brass Nickel Plated, Round Head, Burnished	80 %
Bronze Metal, Flat Head	80 %
Bronze Metal, Round and Oval Head	77½ %

Registers.—A change has been made in the base discounts announced by some of the manufacturers of Registers, which are now as follows:

	Discount.
Black Japan	50 and 10 %
White Japan	40 and 10 %
Bronzed Finishes	40 %
Nickel Plated	50 and 10 %
Electro Plated, Brass, Bronze, &c.	40 %

There has been a good deal of irregularity in the prices at which this line has been selling, with a wide divergence in the quotations of the various manufacturers.

Mechanics' Leather Aprons.—The Hull Brothers Company, Danbury, Conn., manufacture a variety of Leather Aprons for mechanics' use. The list prices on these are given below, which are subject to the following discounts:

Less than one dozen.....20 %
One dozen and less than three dozen.....25 %
Three dozen or more.....30 %

Terms, net 30 days, or discount of 5 per cent. for cash in 10 days, freight being prepaid in lots of three dozen or more.

Split Leather.

	Per doz.
No. 1	$18.00
No. 2	21.00
No. 3	24.00

Sheep Skin.

	Per doz.
No. 1	$15.00
No. 2	18.00
No. 3	21.00

"Light" Aprons for summer use, $3 less per dozen list.

Calf Skin.

FIRST QUALITY.

	Per doz.
No. 1	$24.00
No. 2	27.00
No. 3	30.00

Horse Hide.

	Per doz.
No. 1	$21.00
No. 2	24.00
No. 3	27.00

SECOND QUALITY.

List $3 less per dozen.

Goat Skin.

	Per doz.
No. 1	$15.00
No. 2	18.00
No. 3	21.00

Pig Skin.

	Per doz.
No. 1	$21.00
No. 2	24.00
No. 3	27.00

Rough Cow Hide Splits.

All sizes same price. Average about 26 x 34. List, $12 per dozen.

Glass.—An order has been placed by the National Window Glass Jobbers' Association with the American and Independent Glass companies for 775,000 boxes of Glass, at a general advance of 25 per cent. in price, on all sizes and different qualities, single and double strength. Deliveries are to be made during March and April. The Jobbers' Association have also advanced prices, resulting in the following quotations:

	Discount.
Less than carloads	85 and 5 %
Carloads	87½ %

Letters from the Trade.

Our readers are invited to discuss in these columns questions of trade interest connected with the manufacture or sale of Hardware. We shall be pleased to have a free expression of opinion on subjects deserving the attention of Hardware merchants and manufacturers.

Size of Catalogues.

The following communication touches upon the diversity in the size of catalogues and price-lists and doubtless reflects the opinion of the trade that it would be desirable if there could be more uniformity in this matter. The requirements of the different manufacturers are, however, so various that it is questionable whether it will be found feasible to secure uniformity in this regard:

In this age of advancement and tendency toward uniformity I think it proper to speak a word to help the good work along.

You, without doubt, have in your shelves catalogues of every manufacturer of Hardware and Hardware specialties in the United States and many other countries, and in cataloguing and indexing them have been struck with the endless variety of sizes, to say nothing of colors and textures. Book making during the last ten years has been so reduced to a science that to make more than one size adds greatly to the expense, so we find nearly all the cheaper class of matter bound in covers 5 x 7½ inches; so much so that standard sizes of book shelves are made to accommodate them.

Now, would it be asking too much of you to take a look over your shelves and after noting the size used by the greatest number of catalogue publishers take that as a standard and use your influence with them to have them all or nearly all make their catalogues that size.

I refer particularly to the issuers of pamphlet catalogues of from 4 to 150 pages. It might not be remiss to have two sizes, but it strikes me it would be easy to do this and simplify the methods of indexing materially. Kindly push this idea along, and I miss my guess if you don't get the thanks of all buyers showered upon you.

Index to Catalogues.

The following letter embodies an inquiry from a manufacturing concern in regard to a desirable method of indexing catalogues in such a way that information in regard to the various goods covered by it may be readily obtained. We shall be glad to receive any suggestions on this subject from our readers:

Will you, through *The Iron Age*, give me some information as to the best way of indexing catalogues? We receive quite a number of same, advertising wire goods, drill presses, shears, drills, and many other subjects that are of great value to us. The trouble we find is that in some catalogues fully a dozen or more articles are advertised, and we are at a loss how to properly index same so that we may find the article we want without looking through the whole line of catalogues. Any information on this subject will be highly appreciated, not alone by us, but by many of your readers. Possibly some of your subscribers may help me out.

Floor Oil.

The following letter from a Hardware merchant in New York State describes the plan which he adopts for securing a supply of floor Oil at practically no expense:

Not long since I noticed in *The Iron Age* that some one advised oiling store floors. It is a very good plan.

As a good many of the Hardware dealers sell Oils of one kind and another, I offer them my plan for securing a supply of floor Oil that seems to work well with me, and does not cost anything to speak of.

I keep my Oils in tanks upstairs and draw through lead pipes from the sales floor. The faucets are all over a metal lined sink, and the drippings and overflow fall into the sink, and with another pipe from the sink I lead this overflow to a can in the cellar. With this mixture of Lard Oil, Linseed Oil, burning Oils and Machinery Oils I oil my floors. Most any sort of metal pan, with an outlet in some convenient place, if placed under the faucets of the cans or barrels and a little way from the floor, will let under the pan some sort of can to hold whatever is spilled or overflows the measures, and this overflow would in most cases be thrown away.

Changing to a Cash Basis.

The following inquiry is from a merchant in New Jersey. We shall be pleased to receive advices from the trade in reply to the query of our correspondent:

What amount of business ought to be done in General Hardware, Stoves and tinning on a stock of $10,000, 40 miles from New York? Can a business as above be successfully converted into a cash—spot cash—business, and if so, by what method?

Wright & Pennock, Alliance, Ohio, have disposed of their business to Allott & Kryder, who will continue at the old stand. Mr. Allott is from Imperial, Pa. Mr. Kryder for the past five or six years has traveled for the Logan-Gregg Hardware Company of Pittsburgh, making his home in Alliance. The firm which they succeed was established more than 38 years, or, to be exact, on December 1, 1862, by Alfred Wright and Morris C. Pennock. In July, 1890, Alfred Wright died, and his heirs, Arthur Wright, Ida M. Wright and Ella V. Hartley, retained his interest. At the time of the sale of the business Arthur Wright was the only surviving partner, the others having been removed by death during the past three years.

The National Retail Hardware Dealers' Association.

THE second annual convention of delegates representing various State associations of retail Hardware dealers met at the Sherman House, Chicago, last week. The association formed by the delegates at their convention last year had been named the Interstate Retail Hardware Dealers' Association, but at the meeting just held it was decided that this name was of too limited application to indicate the actual character of the

W. P. LEWIS, President.

organization, and it was decided to change the name to show its national aim and purposes. The association in this report will, therefore, be termed by its new name. The Executive Committee held a session on Tuesday evening, the 5th inst., to outline a programme for the meetings of the convention on the following days. The opening session was held on

WEDNESDAY MORNING.

Among those present were the following:

ILLINOIS.—H. G. Cormick, Centralia; Z. T. Miller, Bloomington; Wm. T. Gormley, Chicago.
WISCONSIN.—L. M. Nash, Grand Rapids; O. P. Schlafer, Appleton.
OHIO.—O. M. Scott, Marysville; W. P. Bogardus, Mt. Vernon; J. P. Duffy, Greenville.
MICHIGAN.—Geo. W. Hubbard, Flint; Charles F. Bock, Battle Creek; Fred. H. Cozzens, Detroit.
IOWA.—H. A. Cole, Council Bluffs.
INDIANA.—Irving A. Sibley, South Bend; W. P. Lewis, New Albany; M. L. Corey, Argos.
MISSOURI.—Fred. Neudorff, St. Joseph.
NORTH DAKOTA.—H. T. Helgesen, Milton.

Kentucky would have been represented but for the illness of the delegate from that State, which prevented him from being in attendance. The Kansas Association is a member of the national organization, but was not represented.

Among those in attendance were delegates from several State organizations that had not yet affiliated with the larger organization, but who were present for the purpose of securing information on which to base reports to their own associations. These delegates participated in the discussions by invitation, but were not allowed to vote. The proceedings were conducted exclusively in executive session, so that the report of the discussions is necessarily meager.

President Miller's Report.

The formal programme was opened by President Z. T. Miller, who read his annual report, in which he reviewed the labors of the association the past year. The signal success of the association in dealing with different wholesalers was gone over with in detail. He suggested that manufacturers desirous of preventing their goods from getting into the hands of illegitimate competitors should agree on and enforce a system by which the source of supply might be traced. He also mentioned the abuse of quantity and class differentials, under which the inequitable conditions confronting the retailer are made possible.

The importance of co-operative work between jobber and dealer was urged, and the work done in this direction was outlined.

The eminently judicious suggestion was made that the president of the association should be relieved from the necessity of passing upon all phases of association work by dividing the work into the following cabinet heads, viz.: Legislative, Financial, Grievance, Jobbers and Manufacturers or Arbitrative, Membership and Organization. One member of the Executive Committee should be appointed to take charge of, investigate and pass upon whatever might present itself under any one of these heads and leave the president to pass upon whatever sundry affairs might arise during the year, and as counselor when deemed necessary after ideas were well formulated. This plan would enable an active business man to accept the presidency, as it would practically relieve him of three-fourths of the work he would be expected to supervise.

An evil that the association will have to remedy is found in the fact that a large number of jobbers and manufacturers do not belong to any association of national character, and consequently do not consider themselves bound by any arrangements that might be entered into between these bodies, thus presenting difficulties in adopting the conclusions of these joint bodies, be they ever so wise and just.

An interesting part of the report dealt with the proposed rearranging of dates of the National and the several State meetings. At present the National meets after the State association meetings for the year are over, and it is impossible to put before them such uniform action as the year's business experience of the National might dictate.

GEO. W. HUBBARD, Vice President.

The importance of two executive or cabinet meetings of the National Association each year was also suggested, as was the proposed suggestion of the National Association suggesting to the various State associations a series of dates, that would insure better facilities for

the association officers, as well as the jobbing and manufacturing interests, to attend the greatest possible number of these meetings at a minimum expense and loss of time.

During the past year the association has aided in shelving the parcels post bill and in causing a letter to go out from the Postmaster-General warning the country postmasters against the scheme of a certain catalogue house to corrupt them into becoming soliciting agents.

In conclusion, President Miller urged that every member of the association should be impressed with the importance of giving such discoveries immediate attention through the proper officers of the association, and be taught that though he may never hear from it the association will in every way possible strive to correct or check whatever difficulty the subject matter may present.

Report of Secretary Cozzens.

The secretary, Fred. H. Cozzens, submitted his annual report, which entered comprehensively into the work done during the year. He prefaced the report with the statement that the fire which destroyed President Miller's store in Bloomington, Ill., last June, burned up the

M. L. COREY, Secretary.

records and papers of the association with the exception of a few documents which the president happened to have had at his house. This interfered quite seriously with the work of the organization for a time. By much diligence, however, this was overcome and a great deal was subsequently accomplished in the line of work which had been mapped out for the organization. He gave full details concerning a trip taken in the interest of the association among the Eastern manufacturers and jobbers of Hardware and of the excellent prospects of favorable action in the interests of retail dealers. He had also interviewed officers of the National Hardware Association, which is composed of jobbers, and their co-operation had been secured in endeavoring to adjust some of the most important troubles now confronting the retail trade. He recommended the association to issue a bulletin, either monthly or quarterly, giving a full list of those in accord with the purposes of the association and also containing reports of the work being done, thus keeping the members informed of what was being accomplished.

Another recommendation suggested was that the influence of the association should be exerted with the different State organizations, whereby the latter might be induced to hold their annual conventions consecutively instead of simultaneously. This would enable an official representative of the National Association to be present at all these meetings. Other advantages would also be derived from this method of holding State conventions which were obvious.

He further recommended uniformity in the method of conducting the different State organizations. By taking the best of the methods of the several States now having associations, and getting up a simple but comprehensive system of blanks and reports to be used, much more desirable results could be obtained with less work on the part of officers and members. This

H. T. HELGESEN, Treasurer.

would greatly assist the officers of these State associations, who frequently have little experience in work of this kind, and, even if they had, are very busy men who are unable to give much time to the matter. The use of blanks would also greatly facilitate correspondence relative to complaints to be referred to the National Association. Another recommendation was that the word "National" be substituted for "Interstate" in the title of the association. A report was given of the receipts and disbursements during the year.

Committees.

After some discussion of the points touched upon in the reports of the two officers, these reports were re-

Z. T MILLER, Executive Committee.

ferred to proper committees for consideration. The president appointed the following committees:

CONSTITUTION AND BY-LAWS.—W. P. Lewis, C. F. Bock, H. G. Cormick, H. A. Cole.

COMMITTEE ON RESOLUTIONS AND NOMINATIONS.—H. G. Cormick, H. T. Helgesen, Geo. W. Hubbard, Irving A. Sibley.

WEDNESDAY AFTERNOON.

Subjects of general interest in connection with the retail Hardware trade were taken up and freely dis-

cussed. The future of the organization was the subject of remarks by individual delegates, all of whom expressed themselves enthusiastically with regard to the prospects of its growth and increasing usefulness. No formal action was taken upon any particular question, as the committees had not yet reported, and it was necessary to wait until these committees had passed upon various matters and presented to the convention the fruits of their deliberations.

THURSDAY MORNING.

The Committee on Constitution and By-Laws recommended a number of changes, among which the most important was the change in the name of the association from Interstate to National, which was adopted by a unanimous vote.

Another change which was adopted provides for the admission as members of individual Hardware dealers from States having no organized retail Hardware dealers' association on the payment of $5 annual dues.

The Executive Committee was directed to correspond with the several State associations, and endeavor to have them arrange for consecutive meetings, to avoid holding them simultaneously. It was also decided to hold the annual meetings of the National Association at a time previous to the meetings of the State associations.

H. G. CORMICK, Executive Committee.

An animated discussion was precipitated on the question of how State associations could most rapidly increase their membership. Much favor was shown toward the adoption generally of the fire insurance idea, which is now being introduced by some of the State organizations, as a feature which would tend to more highly recommend to retail dealers the work of their associations.

The incorporation of the association was discussed and referred to the Executive Committee, to be attended to promptly.

A telegram was received from the secretary of the National Hardware Association, the jobbers' association, sending greetings and hoping that the deliberations of the convention would be productive of much good.

THURSDAY AFTERNOON.

The election of officers for the ensuing year resulted in the selection of the following list:

PRESIDENT.
W. P. Lewis, New Albany, Ind.
VICE-PRESIDENT.
Geo. W. Hubbard, Flint, Mich.
EXECUTIVE COMMITTEE.
Z. T. Miller, Bloomington, Ill.
H. A. Cole, Council Bluffs, Iowa.
Fred. Neudorff, St. Joseph, Mo.
Irving A. Sibley, South Bend, Ind.
H. G. Cormick, Centralia, Ill.

The constitution and by-laws provide that the Executive Committee shall select the secretary and treasurer. The committee was requested by the convention to meet as early as possible to select these officers to complete the organization.

A resolution was adopted inviting the officers of the Retail Merchants' and Grocers' Association to attend the

H. A. COLE, Executive Committee.

next meeting of the National Retail Hardware Dealers' Association, to confer about matters of mutual interest to both organizations.

A general discussion of questions involving the good of the association took place, after which the convention adjourned *sine die*.

Executive Committee Meeting.

The Executive Committee held a meeting on Friday morning and proceeded to fill the offices of secretary and treasurer. The following resolution, which is self explanatory, was adopted:

Resolved, That, whereas, the personal demands upon the time of Secretary Fred. H. Cozzens are such that it

FREDERICK NEUDORFF, Executive Committee.

is impossible for him to continue the work incident to the secretary's office, greatly to the regret of this committee, it will be inadvisable for him to retain that position longer; therefore be it

Resolved, That it is the opinion of this committee that Mr. Cozzens has performed the duties of secretary with commendable zeal and skill and that his services have been greatly appreciated by our committee; and be it further

Resolved, That we do hereby tender Mr. Cozzens a hearty vote of thanks for the able assistance he has given the organization and for the character of the work performed by him.

The committee elected as secretary M. L. Corey, Argos, Ind., and as treasurer H. T. Helgesen, Milton, North Dakota.

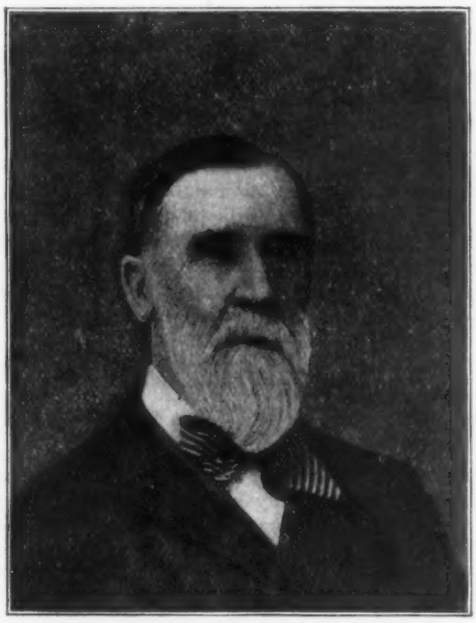
The committee considered a number of matters in connection with the work of building up the association. Among them was a proposition to admit to membership associations of Hardware dealers in all cities in which such local organizations have a membership of 50 or more.

Before adjourning the members of the committee expressed their gratification with the progress being made in the movement to secure effective co-operation by the different State organizations in the direction of national effort. The States represented at this convention were more numerous than at the convention of 1900 and it is believed that next year will see still further growth, and that under the efficient service of the newly elected officers the organization will be made an important factor in the Hardware trade.

Death of W. M. Wyeth.

WILLIAM MAXWELL WYETH died at his home in St. Joseph, Mo., Friday, March 8, of a complication of diseases after an illness of ten weeks.

Mr. Wyeth was president of the Wyeth Hardware &



W. M. WYETH.

Mfg. Company, St. Joseph, Mo., wholesalers of Hardware and manufacturers of Saddlery Goods. He was a pioneer in that city and one of its wealthiest and most influential citizens, having started in business there in a modest way as a retail Hardware merchant in 1860, gradually increasing his trade until a few years later he began jobbing goods, the house now being one of the largest in the United States.

Mr. Wyeth was born in 1832 at Harrisburg, Pa., and was educated in the military academy at that place. His ancestors came from Manchester, England, and settled at Cambridge, Mass. They purchased property, which remained in their possession for two centuries in the male line. Harvard College is said to now occupy a portion of that property.

Before going to St. Joseph Mr. Wyeth was in the Hardware business in Chillicothe, Ohio, where he married the daughter of Thomas Renick in 1858. Of their three children one only, Huston Wyeth, vice-president of the company, survives. There are three brothers living, John and Frank Wyeth of the large drug house of John Wyeth & Bro., Philadedphia, and Parker C. Wyeth of St. Joseph, Mo.

The Wyeth Hardware & Mfg. Company were incorporated in 1880 with a capital stock of $300,000. The wholesale Hardware and Saddlery establismment, 609-625 North Second street, was erected in 1890, and three years later was occupied by the other departments of the business. The general offices of the company are located in this building, where 150 people are employed. In the Harness factories, 302-308 North Second street, about 200 are employed. The company also employ about 50 traveling salesmen, who cover the entire country, from the Mississippi River to the Pacific Coast.

Mr. Wyeth traveled extensively at home and abroad, which, with his great natural abilities, gave to him a polished and attractive presence, which was a prominent feature of his character. As a merchant he was energetic, painstaking, conservative and of the strictest honesty and integrity. He kept in close touch with his business, and it was his habit at noon in fine weather to ride on horseback from his office, both for the exercise and enjoyment derived from it, his early military academy training giving him the erect carriage of the soldier. He was keenly interested in charitable objects and in the affairs of the community, never losing faith in St. Joseph and its future, but in darker days standing firmly by the city and the city's credit.

New England Iron and Hardware Association.

AT the last regular meeting of the New England Iron and Hardware Association held Thursday, February 21, a pleasant incident was the presentation of a gavel by his fellow members to William Chamberlain of the Emery-Waterhouse Company, Portland, Maine, president of the association. At the request of the association, James N. Frye made the presentation speech, in which he referred to it as a privilege to give expression to the esteem in which the association held its foremost officer, and the satisfaction which it had experienced in his able performance of the duties of his position. The following inscription appeared upon the golden band of the gavel: "Presented to William Chamberlain, by the New England Iron and Hardware Association, 1901." Mr. Frye said that these few and formal words should not be taken merely in their bald and literal sense. The brief inscription on the gavel translated would read as follows: "To President Chamberlain: In token of our respect for him as a man; our obligations to him as a presiding officer, and our appreciation of the qualities which prompted us to place him at the head of our association."

Mr. Chamberlain accepted the gavel in a few well-chosen remarks indicative of his high appreciation of the honor.

Owing to the numerous applications for seats at the annual banquet of the association, which is to be held in Boston, March 19, the committee have found it necessary to change from Young's Hotel, as originally announced, to Hotel Vendome, where there is a banquet room admirably arranged and large enough to accommodate the company. Many prominent men in the trade have already accepted invitations and the committee have every reason to believe that the dinner will be the largest in the history of the association. Congressman Littlefield of Maine will speak on "The American Merchant Marine," and Congressman Smith of Michigan on "Expansion and Its Relation to the Commerce of Our Country."

William Faries, Hardware merchant, Smyrna, Del., has lately removed to new and larger quarters in the business center of the town. The main room is 24 x 70 feet and is finished in hard wood, with combination gas and electric chandeliers, improved shelving, showcases, &c. The firm intend to thoroughly systematize their business and will divide the building into departments. The front of the store is finished in sheet iron, and on each side of the main entrance is a capacious show window especially adapted for the display of stock.

SHOW WINDOW DISPLAY.

This Department is to give information in regard to the use which may advantageously be made of show windows of Hardware stores, with practical suggestions in regard to the arrangement and display of goods and other methods of attracting business.

The trade are invited to contribute information in regard to methods which have proved satisfactory, with descriptions of attractive displays. Inquiries also are solicited, to which careful attention will be given.

MANY Hardware merchants, though progressive and enterprising, have failed to keep pace with merchants in other lines in making use of the inexpensive and effective means of advertising afforded by the show window. By those who have given attention to this matter it has been found that money and care devoted to showing goods in such a way as to attract the public eye have brought in large returns.

A Trade Winner.

It was formerly supposed that almost any kind of arrangement of goods in the window was sufficient. Articles, few or many, carelessly displayed, were considered to serve the purpose if they told that the store was a Hardware store.

To-day the case is different. The value of the show window as an advertisement and as a means of selling goods has been realized and is now being appreciated. There are, however, many who do not yet recognize its full value.

In Other Lines.

The department stores, especially in the large cities, have made wise use of their windows and find money expended in making attractive displays wisely used. They have learned that the best talent is none too good to superintend the planning and arrangement. Some of the establishments pay as high as $5000 a year, it is said, to their head window dresser, who in a store of this kind has a staff of assistants whose sole duty is connected with the care of the windows.

A Good Display Pays.

Such expenditures would not be regularly made by careful and progressive houses if they did not yield good returns. What pays in the department and dry goods store should also pay in the Hardware store.

LETTERS FROM HARDWARE MERCHANTS.

Letters have been received from many prominent members of the trade at large on this subject. Extracts from some of these are given below, as showing the estimation in which advertising by means of window display is held by up-to-date and progressive Hardware dealers:

From a Massachusetts Merchant.

We find we can show more people our goods by a window display than any other way. A great many sales come directly from our windows. In many instances we have people inquire for goods they have seen in our windows several weeks prior to the inquiry, showing they have noticed our display and kept in mind what they have seen.

Customers Remember a Window.

An Iowa Hardware dealer has sent the following, which will be of interest as showing that a good display is sometimes long remembered:

The time is at hand when the up to date Hardwareman must and can arrange as attractive a display as his neighbor who deals in clothing, dry goods, &c. There is no question but that increased trade comes from window displays. For example: A lady was asked by one of our salesmen this winter if she would want a refrigerator next summer. The answer was, "Well, that is a good ways off, but I think we will want one about the size of the one you displayed in your west window last summer. What is that size worth?" When people can remember what was displayed in your windows six months previous, it becomes a fact that a well dressed window and an advertisement changed every week in a live daily newspaper are the proper mediums for advertising.

They Sell Goods.

From a large house in the Province of Quebec comes the following, showing their practice and experience:

We change our show windows as often as possible, as we find them the best ad. we have. We have five large show windows and keep them well lighted and find that they sell goods.

From a Large Kentucky Dealer.

It is a very easy matter to trace sales to show windows, if they are properly dressed. Show windows improperly dressed are of no value whatever. The only possible good they can do is to ruin the goods shown and so increase the business of the manufacturer. By keeping your eye turned toward the window you can always tell whether it is making a hit or not in one or two hours after the curtain has been raised.

Can Note Many Sales.

The following experience from an Indiana merchant is of interest:

When our window is well displayed and changed often, we can note many sales made from it, and we find the best results from Specialties and Tools. Builders' Hardware, while it makes a nice display, seldom draws trade.

Attracts the Ladies.

A correspondent in North Dakota gives his observations, which may be of particular value in showing how well it pays to cater to the fair sex:

We can frequently trace sales to window displays, and it occurs to me as I am writing that the greatest number of direct results have been from goods displayed that the ladies become interested in, such as Kitchen or Cooking Specialties. I remember once putting several dozen sea shells in the window, an article we had never kept in stock or ever had a call for before, and, as I recollect it, we sold several gross to the ladies within a few days, to be used by them in preparing and serving delicacies.

A Silent Salesman.

From a Hardware store in Indiana we have the following concise statement pointing out the results of the right and the wrong use of the show window:

Show windows, well kept, act as silent salesmen all the time; but if allowed to get dirty and tossed are worse than none and detract from the balance of the store.

A Connecticut Merchant Says Displays Help Sales.

Goods displayed in any way are more apt to sell than the same goods not displayed, but we have never noticed increased sales in other lines as a result of displaying a certain line of goods. Bicycle Sundries have yielded the best results with us. People are also generally interested in small Hardware. As you may know by our letter head, we handle other goods besides Hardware, but our Hardware window attracts more attention than our other windows, except, possibly, the one devoted to dry goods.

The Cheapest Advertising Medium.

A valued Iowa correspondent, who has given considerable attention to making his show windows attractive and pleasing, says:

Goods well displayed in show windows are the cheapest advertising medium a merchant can use. It brings the greatest returns for the money invested. To make it effective, however, it should receive the same careful attention that is given to newspaper advertising to make that profitable. If the dealer puts a miscellaneous lot of goods, gathered from various parts of his store, in his window, and allows them to remain there for an indefinite period, the effect is just the same as an unchanged standing ad. in the newspaper. In my own experience I find that direct results from window advertising depend, like newspaper advertising, upon the care and attention given to it. I know it pays in both cases.

The Eye of the Store.

A thoughtful Wisconsin Hardware dealer, who believes in making the store attractive and interesting to customers, says:

I have always been a firm believer in the idea that a show window display pays. The people come in at the front door, not at the back, and if you can create an impression by having a neat window display, it is an advertisement for you. "The show window is the eye of the store and should never grow dim."

Windows Make Sales.

The following observation from a merchant in a Massachusetts city illustrates how the well decorated show window draws business:

Any line of attractive goods well displayed and goods changed often in the windows are bound to attract the people. We have noticed many times that people see something in our show windows and come in and buy the same, when if we had not shown it they might not have bought it.

Superior to Any Other Advertising.

From a progressive Illinois firm who have given special attention to their window displays comes the following valued information:

We do not know of any form of advertising that is more advantageous or pays better than show window displays. We consider it superior to any other form of advertising. We find our trade increases very materially on any line that is being shown in the window.

Goods in Windows Yield Good Profit.

The practice of a large Georgia concern of placing in their windows only goods on which there is a nice profit is shown by the following extract:

Our trade on goods that pay a profit is greatly increased by having attractive window displays. We put such goods in our windows as will pay us a good retail profit.

Catch the Eye and You Catch the Customer.

From a correspondent in Tennessee who has paid particular attention to his show windows we have received the following:

The writer has always paid a great deal of attention to window displays, and to say that this way of advertising has helped will not half express it. Nothing catches the eye quicker than a neatly dressed window, and when you catch the eye you generally catch the customer. We trace many sales to our window displays, and in some cases never would have sold goods unless we had placed them in our windows. There is no doubt about window displays paying any one who will study the wants of the trade and then devote a little time to dressing the windows in such a way as to make them attractive. A poorly dressed window is only a burlesque and does no good, but, in fact, harm.

Catches the Observing Public.

The observation of a large house in Michigan is of value in showing that windows properly dressed make buyers:

We can trace increased sales from seasonable and attractive window displays, from the fact that we realize a good per cent. of the passers-by would not think of buying unless their attention was attracted to a certain line of goods displayed. We all the time recognize the fact that a percentage of the people are non-observing, and to this class we cannot look for much of an increase in sales by an attractive window, but we are after the observing ones.

Show One Article.

An Illinois Hardware dealer who is an extensive advertiser states the following as his experience regarding show windows:

We have traced satisfactory results and increased sales when we make an attractive window display, especially when we concentrate upon one particular article and price the same.

Always Secure Results.

A large and progressive Connecticut concern, who are firm believers in the use of the show window to attract trade say:

We consider the window display of the utmost importance as a direct advertising medium of goods we wish to call especial attention to and to push. We always secure results from a good window display. We try to make our windows as attractive and conspicuous as possible.

Sold 67 Roasting Pans.

An up to date Minnesota house tell how direct results can be traced to the show window:

It is very easy to trace results of window advertising. During the month of August last we made a display of Roasting Pans and in one week sold 67 Pans.

Requests for Catalogues, &c.

J. Bolles & Son, Naples, N. Y., dealers in Shelf and Heavy Hardware, Agricultural Implements, Stoves, Paints, Steam and Water Fittings, &c., desire catalogues and price-lists relating to these lines.

W. M. Frizell Hardware Company, New Whatcom, Wash., wholesale and retail dealers in Shelf and Heavy Hardware and Mill, Cannery and Fishing Supplies, have incorporated with a capital of $50,000, paid in. W. M. Frizell is president and manager, and D. H. Evans, whose Hardware business has been consolidated in this concern, is secretary and treasurer. The company solicit catalogues covering the general Hardware line.

Eclipse Mfg. & Plating Company, Birmingham, Ala., is the title of a concern recently organized by F. N. Andrews and K. F. Dunlap for the manufacture of Mantel Hardware, Novelties, &c., and general electroplating. The company are also contemplating the addition of Metal Beds to their line, and would be pleased to receive catalogues, quotations, &c., of equipment for the manufacture of Metal Beds, their trimmings and other supplies.

The Hardware Store in March.

We give in the following columns some practical suggestions as to the use to which March may be put by Hardware merchants. Our correspondents touch upon various methods which may be adopted to make this month, notwithstanding its usually limited amount of business, one which will yield large returns if it is wisely used in preparations for the opening season.

WHAT TO DO IN MARCH.

BY H. C. W.

MARCH, with the Hardware merchant, is largely what its name indicates, stirring, moving, blustery, full of action for the months to come. It begins where the two months of olden time dull season, January and February, leave off, but merchants of the present have found much to occupy and fill up these two early months of the year, and this third one is largely a continuation of that work with much that is new added.

The writer, through oversight, said little of the matter of advertising in February, but if there is a month of the twelve in which it should be carried forward with vigor and vim, in which changes in method and matter, in kind and in quality, should be made, it is in this month of March. It is the time of the moving of the army toward the work shop, the field and the mill, and to catch and hold them long enough for your purpose means, as in every other month of the year, to

Advertise Now,

as possibly never before. Select new methods, new wordings, go after new readers, catch the nearby small towns. Let me ask if a large secret in advertising is not that of talking through your medium to the purpose that some other man is after them, and if you don't get them as buyers he will? Yet how few of us have this in mind in the writing of an ad.? How few of us write as we talk when making a sale, and yet the cost of our goods and the additional cost of the advertising is at stake.

The best and strongest essay the writer has ever read on the subject, that by Fred. Peck of Berlin, Wis., published in *The Iron Age* of February 14, should be read by every Hardware merchant in every section of this broad country. Some of the points he makes are gems. A book written on the subject could say no more than the following, for it drives the nail straight home: "If advertising is worth anything, if it has a mission, it is to inform people; and you can't give the people any information by telling them something which they knew before."

The Daily Newspaper

is probably the very best medium when it comes to results, and still there are many you must reach who are not readers. There are the truck gardeners, good, big buyers and the promptest pay; the village blacksmiths, the nurserymen, and the country contractors. All of them must know you have the goods they want.

It is a capital plan to secure this month correct lists of every line, seeing to it that each man or each woman has a well worded typewritten letter, with a 2-cent stamp on it, not sent as a circular. No one thing brings the non-reader to you like a strong personal letter. If you have no other way of getting at them, your county auditor will furnish you a bound copy of the tax list for a very nominal sum, giving you as nearly a correct list of reliable customers as it is possible to get.

Try the month of March for that silent salesman, the

Special Feature Window.

See how many more Clothes Wringers you will sell with an attractive show of no other line, and each one, no matter if a hundred are shown, each one priced. Try one window entirely covered with early Lawn Grass, sown in low cabbage plant boxes, and, if necessary, grown or sprouted in the cellar, with a handsome sign, "Our Own Mixture Lawn Seed." Where you sold one package before you will sell fifty now, and what pays as much profit as Lawn Seed? Try an exclusive Bulk Seed window, perhaps backed with the necessary Garden Tools. A little later on try a window with 25 or 30 sets of cheap Spades, Hoes and Rakes, each set or bundle marked "Going for $1." See how many more you will sell than with three or four set singly at the front door unmarked.

A Mixed Paint window is good. So, too, a Brush display, a window of Mrs. Potts' Irons at a drive, all of them one thing at a time, and all of them with prices in plain figures. That sort of work does its own selling, and your clerk draws no salary.

The Catalogue House

gets in its work all over this country during the months of January, February and March as in no other months of the year, simply and solely because they recognize the fact that they are counted the dull season of the year by nearly all merchants. Their space and their contracts are larger now than at any other season, on the principle that all merchants should observe that the season of quiet is the time to make trade, and advertising should be at its best. Their methods are worth following, and the very time to put up the fight is *now*, when they are fighting, and when people are ready to buy, or are beginning to look around. It is no trouble to sell the goods they sell, and at the same prices, freight added, with the arguments at hand that it pays to see what you are buying, and it pays to have a reputable merchant's guarantee back of the purchase. A home merchant takes back goods flawy or faulty. They do not. A home merchant can always be found. The catalogue house not always, nor ever without express charges both ways and endless quibbling.

March is a good month in which to begin and keep up the fight for that which belongs to us, and the above, it seems, should be good ammunition.

A Good Time to Add New Lines

is the month of March. Your spring goods are supposed to be well on the road, in the way of buying them, shaping up for them, making new racks and stands, getting price-lists in shape, &c. Is it not a capital idea to provide against some other dull season of the year, with the idea always in mind that every week of the 12 months can be made a busy one?

Have you ever tried a small line of Electrical Goods? They pay well; they sell all the year through, and particularly throughout the building season. Scarcely a house goes up now in which an electrical outfit at more or less expense is not installed, and the installation has become a small matter of labor. For a matter of $20 or $30 a handsome little line can be added—if only of Door Bells and material for same. A half dozen 2½ and 3 inch Iron or Wood Box Bells, a couple of spools of No. 18 Annunciator Wire, two or three dozen assorted Wood Pushes, a half dozen each Liquid and Dry Batteries, a few Bronze Pushes, extra Zincs, extra Sal Ammoniac, two or three Pear and Floor Pushes, and the stock is in and ready for business. There is no dead stock and profit is fair.

Shoe Outfits, Leather and Cut Soles are still new stock for many retailers, and are in constant demand. Many merchants slight Bulk Seeds, in which there is splendid profit. Small stocks of fancy Box and Cabinet Trimmings are carried by but few merchants, and are salable every day in the year. Box Paints can be added at splendid profit by those who do not carry them. Dozens of suggestions might be offered as to small lines, always selling and always profitable.

How About March Collections

and your "left overs" from January and February? If you have seen or written them all once or twice and

still have many left, is not this the month to get at it again? The bulk of them are gotten by constant hammering, and a good collector in the house is worth his weight in gold.

One of the very best ones in the Ohio Hardware Association is the proprietor himself, who has made it a practice for years, after writing and writing and receiving no reply, to again mail the account in a registered envelope, thus insuring a receipt for same, and in nearly 10 out of 12 cases it has brought the settlement of the account. There is no patent claimed on this method, and more of us might use it to advantage.

March and Its Weather

gives us much to look forward to, much hard work, a great deal of preparation, and when it is finally with us is never long enough for the work to be done. It is a good idea to be a little forehanded, start early and keep at it, seeing that each day brings some results toward the rush and hurry we are looking forward to. The first signs of spring and the coming of the birds should find us ready to throw open the doors to let in customers and push out the goods.

FROM INDIANA.

An enterprising house in Indiana give the following particulars in regard to what they do in March. They refer to the system of work and management that they have adopted as yielding the best results:

A Busy Month.—Of all the months March is the hardest one for pleasure or business. However, we have largely overcome this in a business way by getting in our spring stock early, marking the goods, displaying samples, inviting customers to come and inspect, &c.

Canvassers.—We also send men into the country to canvass the farmer trade and sell them Fencing, Implements, Binder Twine, &c. We have been very successful in securing in this way orders for immediate or future delivery. Last season we sold six cars of Fencing in six weeks, besides a large quantity of other goods, and expect to do the same this season—that is, in March.

In the Store.—In the house we make every effort to get all goods in their place, cost and seling prices on each, price-lists revised, &c., thus saving many hours of time when the busy season opens.

Advertising.—We display and advertise this month such goods as will first be called for when spring opens, and in this way get them before the eye of our customers every time they enter our store.

PREPARATIONS FOR SPRING TRADE.

A well-known house in Nebraska refer in the letter given below to the work especially of January and February, which indicates the preparation that is made for their March activities:

Accounts.—With reference to our business methods we would say that as soon as the year is ended we make a great effort to get our books and collections into shape. Every book account if not paid promptly must be put into a note. We begin a new set of books and never transfer an unpaid account to the new book.

Inventory.—While giving the office work the principal attention our stock clerks are going through the stock and arranging everything and getting ready for inventory, which takes place the last week in January.

Purchases.—We invariably place all orders for spring goods in January, and, in fact, most of the summer goods, such as Binding Twine, Steel Goods, Wire Cloth, Poultry Netting, Woven Fencing, Screen Doors, Refrigerators, Freezers, Stoves, &c., &c.

Receiving Goods.—Our aim is to obtain the best spring datings possible and have the goods shipped in at once, getting them on display as soon as we can. When the invoice is completed the spring goods begin to come in and we are ready for any changes or alterations that may be advisable in displaying them.

January Work.—While January is certainly the dullest month of the year, it seems that we are busier and harder at work with the stock than if we had to wait on customers.

No Idle Time.—We are never without work during the dull season, and always find plenty to occupy our time about the store, warehouse and shop.

FROM A SOUTHERN MERCHANT.

The following communication touches upon the March work of a Hardware store in Florida. It will be seen that our correspondent does not confine his efforts to indoor work:

March, in this section, is a good month to put away winter stock that has to be carried over, such as Heating Stoves, Andirons, &c. It is a good plan to wrap the goods carefully and preserve them from rust or defacement.

I usually look after spring orders in building material during March, and write letters to prospective customers and watch the real estate transfers. Agricultural and Garden Tools take a prominent place in the sales during March.

CULTIVATING PROSPECTIVE CUSTOMERS.

From a Hardware house in Michigan, whose methods indicate that they are enterprising in the carrying on of their business, we have the following suggestive advices in regard to their methods:

The Store in March.—Having been through our stock, cleaning, renumbering and putting on new labels, we find our stock at March 1 in the best condition that it is during the year.

The Month's Importance.—In actual cash business March is the lightest month of the year, but it is found that the success of their spring work depends largely upon their March efforts.

Arrival of Goods.—The first of the month their spring goods commence to arrive, and to this class of goods the best of their floor space is devoted.

Cultivating Trade.—At this time of the year, while there are many people in town, it is found that not much purchasing is done. Our correspondents make it a point not only for the principals in the business, but for their clerks to go out and visit people, drawing them out with a view to finding who are expecting to build or paint or make special purchases of any kind.

Premium to Clerks.—To the clerk presenting the largest list of such prospective customers a present is made. Each clerk is allowed one hour a day for such visiting. The names thus obtained are placed on their weekly mailing list and circulars are regularly sent to them until they become interested to call, or it is ascertained that they have purchased elsewhere.

Lists of Mechanics.—It is also ascertained who will be doing mason work, carpentry work, painting, &c., and if necessary to get in their good graces something new in the Tool line is presented. This has been found to be money well expended, as it often depends upon the mechanic whether the customer is satisfied or dissatisfied.

Study of Goods.—They also endeavor to become thoroughly familiar with the new goods, both at their own store and those of their competitors.

Accounts.—March is referred to as a "round up" for their last year's accounts, and settlement in some way, by note if not in cash, is insisted upon.

Wright Shovel Company's New Catalogue.

WRIGHT SHOVEL COMPANY, Anderson, Ind., Arthur G. Sherman, manager of Eastern and export office, 14 Warren street, New York, have just issued a revised price-list of their Shovels, Spades and Scoops, Post, Drain and Ditching Spades, &c. Especial attention is called by the manufacturers to their line of Solid Socket Shovels and Spades of the standard styles, this socket also being used in connection with Irrigating, Molders', Post, Drain and Ditching Spades, in addition to the same styles made in the regular way.

Cultivating Foreign Trade.

THE following letter, which is from an American Hardwareman now residing in London as the representative of important manufacturing interests, describes the foreign field as seen by him, and gives suggestions which should be of service to those desirous of securing trade abroad:

Duty, not preference or choice, has called me to these foreign shores. My duties bring me in contact with all European countries, and I visit personally all these countries at least once a year. I have never shirked work, but my energies here have been taxed to their limit. You can gain an idea of the work which a European business entails if you add to the perplexities of an American Hardwareman the issue of all trade literature and price-lists, in English, German and French.

Principal Buying Terms.

The percentage of dealers who buy in American values, f.o.b. New York, is small, the largest sales being made in foreign values, c.i.f., or Franco verzollt, European seaports, while many dealers have their goods delivered in inland towns. This necessitates much information, if the importer is prepared to quote freight and duty paid. The American manufacturer, if he does business successfully here, has much to learn, and must give much information.

How to Quote Successfully.

It is well for him to know that nine-tenths of his quotations are wasted energy and useless, partly because they are not made in a way to be understood by the inquirer; partly because they are made in values which the foreigner would not reckon with if he could; others, because the inquiries are of would be agents in a 2 x 4 foot garret room, who want the control of a line of goods for a large stretch of country, without having the slightest prospects of success, being unknown to the commercial community.

Would an American manufacturer in New Haven, Conn., quote on Hardware for San Francisco without knowing the position of the dealer to whom he quotes? Yet he does this every day if the inquiry comes from Europe. His large European agents are successfully working up a trade on his goods, yet he kills the hen which laid the golden egg.

Our Surplus and Europe.

Europe, for many American manufacturers, is still the dumping ground for their surplus or their poor stuff thrown on the market at any price. Judiciously handled the European business can be made profitably productive.

If a representative of an American firm in London invites manufacturers of kindred lines to join them in the representation of their goods for Europe, he will be informed that they have a large trade already and they prefer to do business direct.

How Not to Succeed.

It is folly to attempt to do business direct from America with Europe by correspondence without being established here. It is profitable for a time only to sell to one house in each European country. As a rule, in such cases the manufacturer loses his identity, and when this agent drops him he has to start all over again. The foreign agent while he controls this line will do a profitable business, but soon he will either begin manufacturing the same goods, copying the patterns or get some one else to do so, and gradually the manufacturer will be dropped.

How Foreign Manufacturers Have Profited.

Many manufacturers will remember how this policy put a number of large manufacturers in Europe on their feet, and Machine Tool manufacturers will soon discover that their foreign agents are becoming their competitors by starting to manufacture themselves, or inducing others to copy the American models. The ultimate result is that by concentrating their agencies with one or two leading European firms they furnish the capital to start these foreign competitors, who become wealthy in a few years.

Serving Many Masters.

It is amusing to look through your columns, note the foreign agents of our manufacturers, and find that one foreign agent is able to represent as many as six American manufacturers of the same line of goods. If an American and thoroughly representative house invites manufacturers to join them in pushing their goods in the European market on a strictly representative basis, the answer is invariably, "We prefer to do business direct," or "we will be glad to sell you, but you cannot represent us in Europe, because we already have valuable business."

Embarrassments of Importing Foreign Representatives.

An importing American representative can hardly afford to sell American goods in the European market unless he controls them. Business is too expensive here to do it for the benefit of others. He will have the first orders, he will introduce the goods, the maker will get the benefit. To illustrate: During my visit in the United States last fall, I called upon a manufacturer whose Tools I had introduced and sold largely. I wanted him to confine his sales to me, promising in return to confine myself to his goods and to handle no competing line, selling his goods under his name, thereby giving him the benefit of the work done. He advised me that he had been making large sales direct, mentioning the name of a concern to whom he had made such sales. To my astonishment the name proved to be that of an old employee of a firm to whom I had given the sale of the goods in their district, and who had left the firm's employ, thus compromising me in the most awkward manner.

The short sightedness of American manufacturers and their failure to apply business principles in their dealings with Europe, which at home they find indispensable, are bound to harm them in the end.

Advice to American Manufacturers.

Our American manufacturer cannot afford to do business direct with Europe or do it through irresponsible salesmen, because he cannot judge the European market from his home office, and will harm rather than increase his chance of success in a foreign country unless he is fully posted through a local representative. No salesman coming from the States can intelligently judge conditions here on a flying trip through the country as he could in the States. To illustrate: A certain line of Hardware was being sold in England at 70 per cent. discount, when from America came a manufacturers' agent offering his competing line at 75 and 10 per cent.

Six months passed and still he had found no takers, his price having killed confidence in his goods, while a cut of 5 per cent. would have firmly established him.

Fixed and Contingent Expenses.

Why do American manufacturers send boys to represent them in the most difficult of markets, who look for their commission only and not for an employer's profit?

Business cannot be done in Europe on the margin of American sales. It costs more to travel, more to live; there is a heavier income tax on your net income which takes that much out of your profit. Salaries and rents are higher, you must put on more airs, must wait for your money much longer and must put up with deductions which would never be allowed at home, or fight continually. Inland deliveries cost more than the ocean freights, goods are pilfered in the docks, you must give Christmas boxes and contribute toward regattas of lightermen. Some will deduct the stamps used in sending your remittances; the Russian custom house official takes heavy fines for little errors in the bill of lading, and you have even seen a bill from a European freight agent containing his charges for handling a package.

Suggestions.

My advice to American manufacturers is stay at home and sell through exporters, unless they know how to make a profit or to ally themselves with good rep-

resentative American houses who are established in Europe, if they cannot establish their own (this is expensive), and the results will come, even if not all at once.

They should send no traveling men here unless they are accomplished gentlemen, speaking French and German as well as English—no boys. They should apply for English, German and French patents on all improvements, but especially for German in connection with the American patent. They should register their trademarks in all these coutries in addition to the registration in America. If this is not done before the improvements are offered for sale in these countries their improvements are common property, and if they prove of value will be adopted at once by foreign makers. Therefore the value of patents and trade-marks in foreign countries cannot be overestimated.

American manufacturers who are willing to work on these lines will succeed in building up a good business in Europe, as profitable as their American business.

Hardware in the Philippines.

FROM OUR SPECIAL CORRESPONDENT.

Iron for the Philippines.

THE new Philippines are very much in want of Iron for manufacturing purposes. Iron is wanted for the manufacture of Tools, Farming Implements, Building Trimmings, Weapons and hundreds of other articles. The wheelwrights are looking everywhere for Iron with which to repair and construct vehicles. The mining engineers are paying large sums of money for pieces of old Iron for use in the various mining enterprises. Owners of sugar cane crushing machinery, proprietors of machine shops and the shipbuilders are offering all sorts of prices for Iron, Steel and other metals. Yet it is almost an impossibility to buy Iron in the islands. One may visit a dozen machine or wheelwright shops and he will see that the workmen are making everything of something else.

How Old Material is Utilized.

I have seen these native machine workers produce hundreds of different kinds of Metal Implements and parts of machinery from old Vehicle Springs and Wagon Tires.

In fact the great Iron supply of the islands seems to have been obtained from the old Tires and Springs of vehicles shipped here from Spain for the past generation or two. Spain never made any arrangements for the supply of suitable Iron for the islands, although it is a well-known fact that there are vast deposits of Iron in the mines of Mindano, Cebu, Negros and Panay. However, none of these mines are worked for their valuable ores and they cannot be counted as anything in the present demand for Iron.

Why New Iron Material is Needed.

There is a great need of new Iron everywhere. You can go into every shop in a city or town in any of the islands of the Philippines and, although you may not hear the same story of more Iron wanted, for the reason that the metal workers of the country are used to getting along without a supply, you will observe the shortage in this valuable metal by the way in which the workmen are filling the void.

Your correspondent visited the shops of Luzon, Panay and most of the other islands during the past few months and noticed the same conditions in all, except, perhaps, a few of the shops in the immediate vicinity of Manila. In a few of the latter shops they seemed to have a fairly good supply of Iron, which they had purchased from one of the new Iron and Metal stores lately opened in the city of Manila. But in all of the other places the only metal worked was old scraps and such pieces of corroded, rusted, broken and generally defective Iron as could be collected from the waste heaps of the country.

Old Iron 30 Cents a Pound.

The Spanish authorities failed to furnish the islands with a great many things, but they were good enough to sell to the rich of the country many thousands of poorly built vehicles. The land owners, merchants and many others of the islands have always purchased freely of the Spanish Carriage makers, with the result that the country is well supplied with wheeled vehicles. During the past 100 years many thousands of these vehicles have been cast away and permitted to decay upon the junk piles. One may look upon these wrecks of past days and he will note that every particle of Iron has been removed from them. As soon as a vehicle has finished its days of usefulness the same is turned over to the nearest wheelwright, machinist or metal worker, who proceeds to remove every bit of Iron, paying for the same 10, 15, 20 and often as high as 30 cents gold per pound. If it were not for the Iron secured from the cast away vehicles of the country the smiths of the islands would have been in bad circumstances during the past generation. Oftentimes the Iron furnished the machinists by collectors of Iron is so badly corroded that an American machinist would not use it. Force of circumstances, however, compels the native workman to utilize the metal, no matter how bad its condition may be.

The Philippine Junk Dealer.

The collectors of old scraps of Iron in the islands make considerable money. They go from town to town and buy up old vehicles and any devices that may have Iron on them. They then remove the Iron and sell it to the consumers at good prices. It appears peculiar that there should be a shortage of Iron in a country which has been populated so long. During the past few months two or three very good machinery and general supply stores have been opened in Manila, and these stores are carrying lines of Iron, which they sell at reasonable prices, but it will be a long time before Iron workers through the islands get into the custom of buying new Iron, so long have they been obliged to utilize and work over the old scraps. In Iloilo one of the general supply stores which carries Hardware has put in a supply of Iron, but it is of not much avail to the general Iron worker for the reason that as soon as the owners of the store receive a new stock of Iron some one else always buys it up immediately at greatly advanced prices and gives no chance for the ordinary buyer to get a share, unless, perchance, he is on the wharf when the goods are landed.

Quick Sales; Large Profits.

The same conditions prevail on Negros, where the writer happened to be at one time when a ship arrived with some supplies of Iron. The purchaser operated a local store and invested about $500 gold in Iron. He managed to get some of the Iron as far as his store where his customers could look at it, but the greater portion was bought up at high prices by men on the wharf. The store keeper told me he wanted to retain some of the Iron so as to carry a stock to accommodate his regular customers, but he could not resist the tempting cash offers of the men who approached him on the wharf. This native store keeper cleared about $1000 gold in cash on what he sold at the wharf and had some of the Iron left with which to furnish customers at retail.

Iron for Tool Making.

There have been a great many tools manufactured in the Philippines during the past few months—more so than ever before in the history of the islands. If one goes among the tool makers he will be surprised to observe under what adverse conditions they are making tools. Old Carriage Springs and Wheel Tires form the principal metal from which the needed tools are made. Often this metal is eaten through by corrosion. Scale can be scraped off in several thicknesses. Quite a goodly sized piece of iron is worked down to small proportions when the defective part is removed. Yet these pieces of refuse metal are highly treasured. They are kept locked up constantly. The owner values them at high prices. If the scarcity is very great, the Iron is practically priceless for the time being.

Filipinos Apt Pupils.

All sorts of tools are being made by the local shops at the present time, the Americans having furnished the patterns. The native workmen will take an American model of a Hammer, Chisel, Rake, Hoe, Pick Axe, Shovel, &c., and work out the same from rusted old bits of Iron that the average American would consider valueless. It requires much labor and patience on the part of the workmen, but they finally succeed in producing the desired tool. These shops of the islands in which tools are made would pay exceedingly good rates for supplies of Tool Steel and Iron. Anvils are very much wanted by them. I have seen the best of workmen in the native shops use wretched Anvils composed of worn and broken bits of metal. In some cases the natives have formed Anvils by bolting bits of Iron together. They would, so several informed me, pay any price asked for proper Anvils, as they were much hindered in their work by the lack of them.

In the Machine Shops.

There are none who suffer so much from the lack of Iron as the machinists of the country. I have seen shops practically idle for weeks at a time, with many orders ahead, owing to no Iron being available. Orders are constantly being received from the sugar cane crushers, the operators of the oil factories, the miners and others for parts of machinery which have given out and need renewal, and often these orders cannot be filled for weeks and sometimes months. I have known of cases where certain parts of broken machinery could not be repaired until a certain ship arrived with the needed metal, and the delay was four months.

Scrap from Ruined Plantations.

The collectors of Iron have been able to get some pretty good hauls of metal from the burned and deserted sugar mills of the country recently. The metal secured in these places is utilized by the machine shops.

Gears are wanted by the miners and manufacturers and great difficulty is experienced by the shops in getting metal with which to manufacture them. The Spanish used a form of disk for clamping the great walls of the churches and convents of the islands, and in places where these buildings have gone to ruins the local machinists secure these disks and shape them into gears. All sorts of schemes have to be resorted to by the native machinists to fill an order.

Southern Hardware Jobbers' Association.

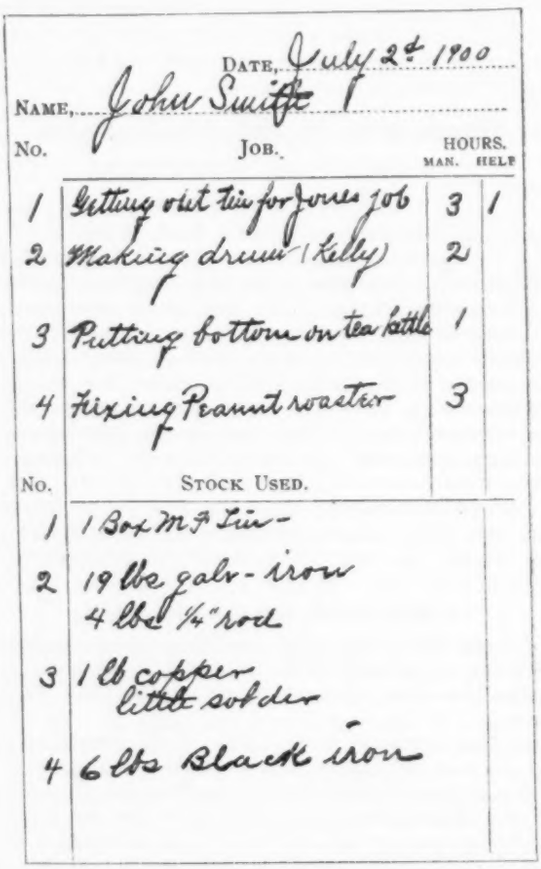
A MEETING of the Executive Committee of the Southern Hardware Jobbers' Association was held at Asheville, N. C., last week, the deliberations extending over three days. The most important matter considered was the selection of the time and place of their next annual convention. After a thorough canvass, Asheville was determined on, with the Battery Park Hotel as headquarters. June 4, 5, 6 and 7 were decided on as the days for holding the meeting. The committee regretted to disappoint their Cleveland friends, who were so courteous in inviting the association to meet in their city, but felt that the best interests of the association would be better served by meeting in Asheville.

The Alton Shovel Company.

BEALL BROS., Alton, Ill., who are well-known manufacturers of Miners' Tools and Supplies of all kinds, have determined to enlarge their business, and will go extensively into the manufacture of Shovels of all kinds, including hollow back and plain back. The new corporation will be known as the Alton Shovel Company, and will be entirely separate from the Mining Tool corporation of Beall Bros. The shareholders will be Charles Beall, Sr., Edmond Beall, J. Wesley Beall and Chas. L. Beall. The capital stock of the new corporation will be ample for the purpose, and a large number of men will be employed. The machinery for the plant has all been contracted for, including machines for making handles. The expected capacity of the plant is 200 dozen shovels per day. The contract for the building, which will be 60 x 165 feet in dimensions, has been let, and the company hope to be in active operation within 60 days.

Keeping Track of Shop Work.

The value of any blank for keeping track of shop work when all kinds of plumbing, heating and tinsmithing are done depends upon its adaptability to all the different branches. The card which we have reproduced is used by the H. W. Keeler Company, Waterbury, Conn., and while it is filled out with different kinds of sheet metal work to show its use, it is also well qualified for use by a man sent out to fix a conductor pipe, put a washer on a faucet, put up a gaslight bracket,


DATE, July 2d 1900

NAME, John Smith

No.	JOB.	HOURS. MAN.	HELP
1	Getting out tin for Jones job	3	1
2	Making drum (Kelly)	2	
3	Putting bottom on tea kettle	1	
4	Fixing Peanut roaster	3	

No.	STOCK USED.
1	1 Box M F Tin -
2	19 lbs galv - iron 4 lbs ¼" rod
3	1 lb copper little solder
4	6 lbs Black iron

Card for Keeping Track of Shop Work.

clean a range, put a new grate in a furnace or do any similar job. The size of the card is 4 x 6½ inches, but it can be made larger if necessary. Provision is made on the card for the date, the name of the workman, the time consumed on each job and the stock used. Numbers designate the different jobs, while the stock used on each job has a corresponding number. Thus job "No. 1. Getting out tin for Jones' job" required a box of M. F. tin. This form of card has proved satisfactory to the company, who remark that they have yet to find a form better suited to their purpose.

The Hockaday Hardware Company.

THE HOCKADAY HARDWARE COMPANY, Wichita, Kan., will about March 12 begin excavating for a new building which they intend erecting at once. Their new quarters will be a substantial brick structure, 120 x 125 feet, three stories and basement. In the construction of their new building their aim will be strength and convenience. Mr. Hockaday has spent considerable time in going over the country inspecting new and up to date Hardware buildings and getting new ideas. The Hockaday people have conducted in Oklahoma since it was opened for settlement in 1889 three very successful retail Hardware stores in Kingfisher, Enid and El Reno.

In November, 1898, they conceived the idea of opening an exclusively wholesale Hardware establishment at Wichita, Kan. Shortly after I. N. Hockaday, the present manager, went East and purchased an opening stock amounting to more than $60,000. Since opening their business has been much beyond their expectations and has outgrown their present quarters, so that they are compelled to erect a new building as above.

Trade Items.

ADVICES from Portland, Ore., state that the Marshall-Wells Hardware Company of Duluth, Minn., have leased a large warehouse at the corner of East Morrison and First streets. The building is 100 x 100 feet, two stories high.

AN automobile exhibition is to be held in Chicago from March 23. to March 30, inclusive. The coming event will be under the same management as the phenomenally successful Chicago Cycle shows. It was originally intended to be held last November, but for good reasons the time was changed to the last week in March. The *Cycle Age* of March 7 gives a large list of the exhibitors who have already contracted for space. It will be held in the Coliseum, which is well located, besides being admirably adapted for such purposes.

GEORGE A. MASON of the sales department, American Steel & Wire Company, Chicago, accompanied by his family, sails on March 16 for an extended tour of Europe, having been granted a four months' leave of absence.

THE plant of the Youngstown Specialty Mfg. Company, at Youngstown, Ohio, makers of Tin Cans and other specialties in Tinware, will probably be absorbed by the Tin Can combination, which is now being organized by Judge Moore and others. It is also likely the plant of the Albert Fischer Mfg. Company, at Hamilton, Ohio, will be taken over by the new consolidation.

Price-Lists, Circulars, &c.

SARGENT & Co., New Haven, Conn., and 149-153 Leonard Street, New York: Illustrated catalogue, 32 pages, relating to Screen Hardware for window and door Screens, including Springs, Catches, Latches, Brackets, Bolts, Lifts, Pulls, Knobs, &c., in great variety, as well as a number of specialties of this character.

MILWAUKEE GAS STOVE COMPANY, Milwaukee, Wis.: Catalogue of 48 pages, devoted to Perfection Gas Stoves, Ranges, Hot Plates, Water Heaters, Coffee 'Roasters, Laundry Heaters, China Kilns, Glass Kilns, Parlor Grates, Radiators and Heaters.

ANTHONY WAYNE MFG. COMPANY, Fort Wayne, Ind., and St. Louis, Mo.: Illustrated catalogue of Washing Machines in a large variety of styles, including round, square and combination Washers, together with such specialties as Clothes or Laundry Forks, Bread Boards, &c.

EAGLE LOCK COMPANY, Terryville, Conn.: A number of pages for insertion in their catalogue, Volume 18. They relate to Locks, Padlocks, Brass and Bronze Label Holders, Sample and Suit Case Corners, &c.

The Hardware store of Lemons & Leland, Colon, Mich., was destroyed in a recent fire. The stock was worth about $4500, on which $3000 insurance was carried, which was allowed in full. The firm are now located in another building and are doing business as usual. They are dealers in general Hardware, Tinware, Pumps, Paints and Oils, Brushes, Stoves, Bicycles, Sporting Goods, &c.

G. M. Getts, Delta, Col., has bought J. W. Sanders' stock and has consolidated it with his own at Mr. Sanders' former establishment. Mr. Getts will continue the wholesale and retail business in Shelf and Heavy Hardware, Stoves, Tinware, Farm Implements, Wagons, Buggies and Sporting Goods under his own name.

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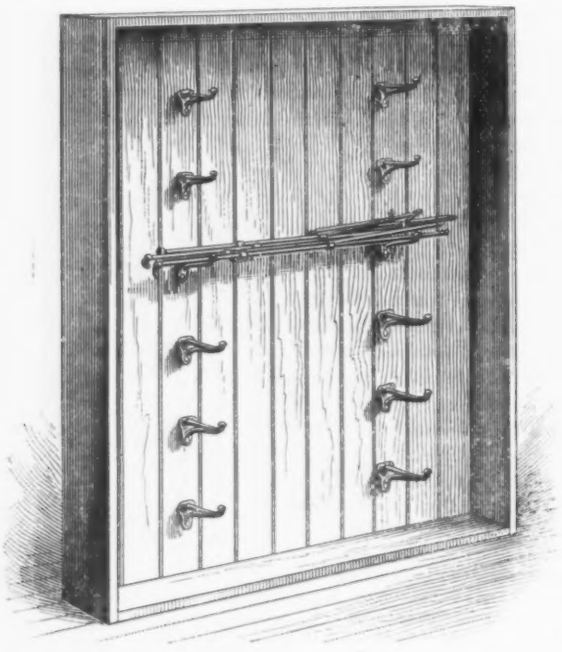
Rack for Transom Lifters.

THE display and sale rack for Transom Lifters here illustrated is in use by the Springfield Hardware Company of Springfield, Ohio. The rack is about 6 feet square and is fastened to an out of the way wall space. Twelve single curved tip harness hooks are screwed to

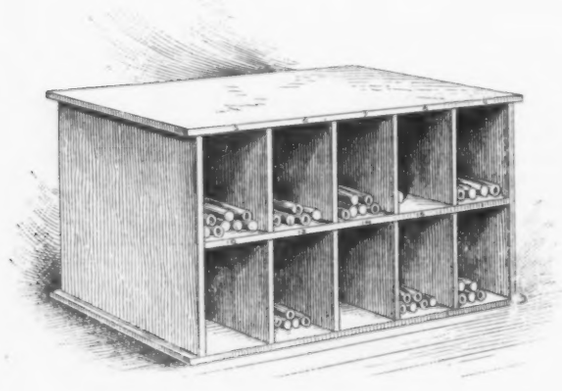


Rack for Transom Lifters.

the back, in the positions shown in the cut. Six and 8 inch hooks are used, the larger at the bottom. The hooks accommodate six sizes of Lifters—3 x ¼, 4 x ¼, 4 x 5-16, 5 x 5-16, 5 x ⅜ and 6 x ⅜. When Transom Lifters are received each part is tied compactly to the main body, after which a small sized coin envelope containing the necessary screws is attached to each Lifter, thus making them ready for sale and delivery.

Movable Sash Weight Bins.

THE bins shown in the accompanying cut are not nailed to the floor, but may be moved to any part of the store, if a rearrangement of stock is found desirable. The bins are simple in construction and provide for the following pound sizes: 5, 6, 7, 8, 9, 10, 12, 14, 16



Movable Sash Weight Bins.

and 1 pound additions, with the sizes marked plainly above each bin. We are indebted to the Springfield Hardware Company, Springfield, Ohio, for advices in regard to this method of handling Sash Weights. In this connection they suggest that, when ordering Weights, if not in carload lots, a large saving in freight will be made by having them come wired in bundles.

Among the Hardware Trade.

Carlisle & Grimes, wholesale and retail Hardware, Cambridge, Ohio, have just added to their former line a full assortment of Stoves and Ranges, Tinware and House Furnishings.

O. J. Combest has bought the Hardware business formerly conducted by T. C. Delaney at Paducah, Texas.

A. H. Van Pelt, Ballinger, Texas, has admitted a partner in his Hardware, Stove and Farm Implement business, and the style is now Van Pelt & Kirk.

J. C. Faickney, with store at Columbia, Texas, has purchased the business of William Penman at Angleton, and will continue it as a branch establishment.

The Devenish Hardware Company are successors to Plough & Waters at Pullman, Wash.

Wilfong & Holley have succeeded Crawford & Wilfong in the Hardware, Stove and Farm Implement business in Crandall, Texas.

Straus, Housewright & Co. have succeeded E. Straus in the sale of Hardware, furniture, &c., at Wylie, Texas. The firm have lately moved into a new brick building, 35 x 100 feet in dimensions, two stories, and expect to double their former trade.

Leftwich & Rutherford are successors to Holtzclaw & Rutherford, Tioga, Texas. The former stock has been materially increased.

The Howell Hardware Company have purchased the business formerly conducted by Thornhill Bros., Waxahachie, Texas. The interior of the store has been remodeled.

Brittson Bros., Decatur, Ind., are building an addition to their establishment which will be used as a special salesroom for Buggies and Wagons.

Weimers, Ruckert & Co. have lately opened up in the Stove, Tinware, Shelf Hardware and Mining Supply business in Rock Springs, Wyo.

Harris & Stickel have succeeded Pettee & Cecil in the Hardware business in Princeton, Ill.

A. I. Lande has succeeded Lande Bros. in the Hardware, Tinware, Stove, Farm Implement and Sporting Goods business in Graettinger, Iowa. The store has been enlarged and is now 20 x 100 feet.

E. L. & C. C. Ahrenbeck have succeeded Ahrenbeck & Terrell in the Hardware, Stove, Tinware, Agricultural Implement, Crockery, Mill Supply and Buggy and Harness business at Navasota, Texas.

W. J. Thomanson has admitted a partner in his Hardware, Stove and Farm Implement business in Cottonwood, Texas, and the style is now Thomanson, Wristen & Co.

E. Sprankle and W. S. Golden, both of Ottumwa, Iowa, expect to open up in the Hardware business in Creston, Iowa, about April 1.

W. A. Phifer has opened a new Hardware store at Spartanburg, S. C. Mr. Phifer will crrry a full line of Shelf and Builders' Hardware and Farming Implements. He has had eleven years' experience in the business, having been five years with Gillam & Conelly, Morgantown, N. C., and the balance with Montgomery & Crawford, Spartanburg.

Sugg & Lauderdale, Dyersburg, Tenn., will enlarge their warehouse and equip the store with new shelving and fixtures. The firm expect to open a jobbing department early this summer.

Holland & Cooper have succeeded Perry & Hendricks in the Hardware, Agricultural Implement and Wagon business in Midlothian, Texas.

The Hardware stock of the Carlson Hardware Company, Gothenburg, Neb., was recently destroyed by fire. The net loss above insurance was $1500.

Tucker & Son have bought the Hardware, Stove, Tinware and Sporting Goods business of J. B. Hughes, Lamont, O. T. The new firm will add a line of Farm Implements, Buggies and Wagons as soon as a new building, 46 x 80 feet, now in course of erection, is completed.

H. M. Hendrickson's store at Fessenden, N. D., was burned out a short time since. The loss was $4500, with insurance of $3200. Mr. Hendrickson will not resume business.

The firms of Gaston & Sprinkel, Baird & Jones and Thomas & Dobbins, Cameron, Texas, have consolidated their interests under the style of Gaston & Sprinkel Mercantile Company, who will carry the following departments: General Hardware and Farm Implements, Crockery and Glassware, Stoves and Wagons, Furniture, Saddlery and Harness, and dry goods and groceries.

Albert Russell has purchased the retail Hardware business formerly conducted by I. T. Drake at Madelia, Minn.

Moehle & Tscharner, dealers in Hardware and Implements, Okawville, Ill., have disposed of their Implement department to C. Schmidt. At the end of 1901 Mr. Tscharner will retire, and Fred. Moehle will continue under his own name.

E. Ewart has sold his interest in the Hardware firm of Ewart & Marshall, Sedalia, Mo., to R. J. Howe, and the business is now being conducted under the style of Marshall-Howe Hardware Company. The company handle Shelf and Heavy Hardware, Stoves and Tinware, Sporting Goods and Blacksmiths' Supplies, at wholesale and retail. The establishment is undergoing a general renovation and new shelving is being put in.

N. W. West has disposed of his interest in the Julius Lewis Hardware Company, Raleigh, N. C., to his partners, Charles B. Hart and Frank T. Ward, who will continue under the former style.

McWilliams Brothers have succeeded W. E. Cole in the Hardware, Stove and Farm Implement business in Monroe, Neb.

The establishment of E. Cook at Tolono, Ill., was recently destroyed by fire. Most of the stock was saved. Mr. Cook will rebuild as soon as the weather will permit.

J. Payne Hardison has succeeded the Shires & Hardison Hardware Company, Lewisburg, Tenn.

Easton Trading Check Company, Easton, Pa., have just embarked in business at that point, handling a full line of Hardware, Tools and Stoves.

Harry E. Gross has opened a new Hardware store at 5 West Twentieth street, Baltimore, Md. He will also carry a full line of Paints, &c.

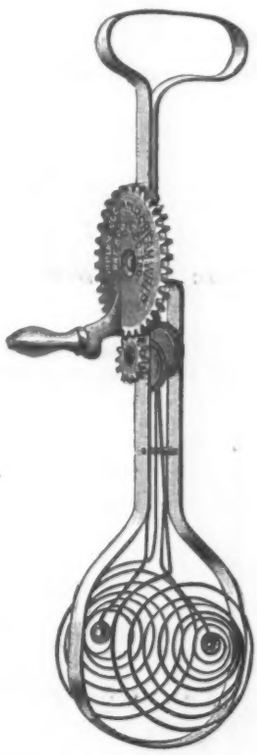
W. H. Morris has lately entered the Hardware field at Edgefield, S. C.

George M. Meader, Hardware, Stove and Farm Implement merchant, Sibley, Iowa, has admitted his two sons to partnership in his business and the firm style is now Meader Bros. & Co.

U. T. Hungerford Brass & Copper Company, 121 Worth street, New York, have recently secured large contracts for supplying the United States Government with seamless brass tubes. As the United States Government subject all tubes purchased to very critical tests, the company express themselves as especially pleased at this indorsement of their product. We are also advised that from the same source considerable quantities of seamless brass and copper tubes are being supplied to contractors now constructing war vessels of the Government.

Egg Beater and Cream Whip.

To their large line of egg beaters the Standard Company, Boston, Mass., have added a new egg beater and cream whip. The frame is made of steel brightly polished. To work the beater the power is applied to a spur gear, which engages a pinion on whose shaft are attached two eccentrics which give a rapid motion to the



Egg Beater and Cream Whip.

wire dashers. The manufacturers refer to this as a marked improvement in beaters, and an important addition to their already large variety, which has been gradually developed during the twenty years they have been manufacturing.

The Ole Olsen Lawn Rake.

The Ole Olsen lawn rake, of which the Piqua Handle & Mfg. Company, Piqua, Ohio, are manufacturers, and C. M. Avery & Co., 165 Lake street, Chicago, Ill., are selling agents, is illustrated in Fig. 1. The manufacturers

Fig. 1.—The Ole Olsen Lawn Rake.

state that the handle, head and teeth are made of well seasoned, straight grained hard wood, and are oil finished; that the malleable ferrule connecting the head to handle possesses great strength, and is very attractive.

The teeth are made of extra selected stock, and so constructed, it is claimed, that when once driven into position they will never shrink from place. They have an even taper and cannot bend and clog like metal teeth. Fig. 2 shows the knob at the end of the teeth, set by a patented process, that prevents the teeth from dropping out. It is pointed out that the curved heads admit of only four to six teeth coming in contact with the surface of the lawn at one time, the teeth on either side of the

Fig. 2.—The Knob at the End of the Teeth.

center doing their work perfectly without tearing up the grass. The head being curved, in raking the materials are thrown toward the center of the rake. When desired, the rakes are also furnished with straight heads.

Humphryes Mfg. Company's Tubular Well Pumps.

The Humphryes Mfg. Company, Mansfield, Ohio, are placing on the market a new line of tubular well pumps.

Fig. 1.—Tubular Well Pump H 804.

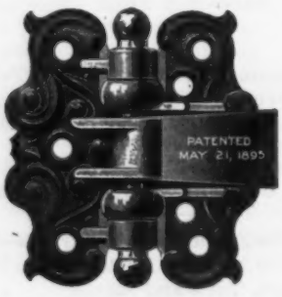
Fig. 1 illustrates their model H 804. In this the 2-inch tubular pipe is extended up through the base and is screwed in the stock as indicated. Fig. 2 shows another pump, H 805, which is designed to fit over a 3-inch casing, and is tapped out for 1¼-inch pipe. In these pumps the rods and valves are easily reached and adjusted. The same style pump is made with hand and wind mill set lengths. The company are offering, also, a new line

Fig. 2.—Tubular Well Pump H 805.

of porcelain lined pitcher spout pumps and porcelain lined cylinders.

Detachable Hold Back Hinge.

The Arcade Mfg. Company, Freeport, Ill., have just brought out a flat spring detachable hold back screen door hinge, which they have named the No. 50 Detachable. The hinge is so made that the two leaves are held together by the tension of the spring, requiring no pin to keep them fastened. The cam which operates the spring is made in the form of a bridge and not



No. 50 Detachable Hold Back Hinge.

with a solid face. When it is desired to detach the hinge, this can be done by inserting a nail or other piece of metal under the bridge of the cam, which throws the tension on the leaf on which the spring is mounted. The door is then lifted off. The spring is of the best quality of steel and holds the door shut firmly, while it at the same time enables the door to be held back when thrown over the center of the hinge. The hinge is attractive in design, and the company claim that it is the quickest acting and most desirable hinge of this class in the market. The trade is supplied through Warren McArthur, 19 and 21 Randolph street, Chicago.

Current Hardware Prices.

REVISED MARCH 12, 1901.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. They apply to such quantities of goods as are usually purchased by retail merchants. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓@33⅓&10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Cut Prices.—*In the present condition of the market there is a good deal of cutting of prices by the jobbing trade, whose quotations are often lower than those of the manufacturers.*

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (May 3, 1900), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters Blind—

Domestic, ₩ doz. $3.00....33⅓@33⅓&10%
North's.....10%
Zimmerman's—*See Fasteners, Blind.*

Window Stop—

Ives' Patent.....25&5%
Taplin's Perfection.....50%

Ammunition—*See Caps, Cartridges, Shells, &c.*

Anvils—American—

Eagle Anvils.....₩ ₺ 7¼@7¾¢
Hay-Budden, Wrought.....8¢@9¼¢
Horseshoe brand, Wrought.....9¼¢@9¾¢
Samson.....₩ ₺ 7¼@8¢
Trenton, Wrought.....₩ ₺ 8¼@8¾¢

Imported—

Armitage's Mouse Hole.....8¾¢@9¼¢
Peter Wright's.....9¼¢@9¾¢

Anvil, Vise and Drill—

Millers Falls Co., $18.00.....20%

Apple Parers—*See Parers, Apple, &c.*

Aprons, Blacksmiths'—

Hull & Hoyt Co.:
Lots of 1 doz.....25%
Smaller Lots.....20%
Lots of 3 doz.....30%

Augers and Bits—

Com. Double Spur.....70&10@....
Boring Machine Augers.....60&10&10@70&10%
Car Bits, 12-in. twist.....60@60&10%
Jennings' Pattern:
Auger Bits.....50&10&5@60%
Ford's Auger and Car Bits.....40&10@40&10&10%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list....40%
No. 30, R. Jennings' List.....50%
Russell Jennings'.....25&10@25&10%
L'Hommedieu Car Bits15&10@15&10&5%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....50%
Snell's Car Bits, 12-in. twist.....60%
Wright's Jennings Bits (R. Jennings' list).....50%

Bit Stock Drills—

Standard List.....65@65&5%

Expansive Bits—

Clark's small, $18; large, $26.....50&10%
Lavigne's Clark's Pattern, No. 1, ₩ doz., $36; No. 2, $18.....50&10%
C. E. Jennings & Co., Steer's Pat.....33⅓%
Swan's.....60%

Gimlet Bits—

Common Double Cut..gro. $3.00@3.75
German Pattern.....gro. $3.25@4.50
Double Cut, makers' lists.....50&5@50&10%

Hollow Augers—

Bonney Pattern, per doz. $11.00@11.50
Ames.....25&10%
New Patent.....25&10%
Universal.....30%

Ship Augers and Bits—

Ford's.....40%
Snell's.....40%
C. E. Jennings & Co.:
L'Hommedieu's.....15&10%
Watrous'.....40%

Awl Hafts, *See Hafts, Awl.*

Awls—

Brad Awls:
Handled.....gro. $2.75@3.10
Unhandled, Shouldered.gro.63@66c
Unhandled, Patent.....gro. 66@70c
Peg Awls:
Unhandled, Patent....gro. $1@1¼c
Unhandled, Shouldered.gro.65@70c
Scratch Awls:
Handled, Common..gro. $3.50@4.00
Handled, Socket..gro. $11.50@12.00

Awl and Tool Sets—*See Sets, Awl and Tool.*

Axes—

First Quality, best brands.$5.25@6.50
First Quality, other brands$5.00@5.25
Jobbers' Special Brands:
Good Quality.....$5.00@5.50
Best Quality.....$6.25
Cheap, Handled Axes.....$5.50@5.75
Beveled, add 25c doz.

Axle Grease—*See Grease, Axle.*

Axles—*Iron or Steel.*

Concord, Loose Collar.....4½c
Concord, Solid Collar.....5 c
No. 1 Common.....3@3¼c
No. 1½ Com. New Style..3½@4 c
No. 2, Solid Collar.....3½@3¾c
Nos. 7, 8, 11 to 14.....75&10%
Nos. 15 to 18.....60&10&10%
Nos. 19 to 22.....80%

5% cash 10 days.

Boxes, Axle—

Common and Concord, not turned.. lb. 8c
Common and Concord, turned..lb. 9c
Half Patent.....lb. 9c

Balances—Sash—

Caldwell new list.....50%
Pullman's.....60%

Spring—

Spring Balances ...50&10@50&10&5%
Chatillon's Light Spg. Balances...40&10%
Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50%
Chatillon's Large Dial.....30%
Peiouze.....50%

Barb Wire—*See Wire, Barb.*

Bars—Crow—

Steel Crowbars, 10 to 50 lb., per lb.. 5@5¼c

Beams, Scale—

Scale Beams, List Jan. 12, '97.30&10%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters—Egg—

Standard Co.:
No. 5 Steel Handle Dover..₩ gro. $6.50
No. 10 Cast Handle Dover..₩ gro. $8.00
No. 10 Steel Handle Dover.₩ gro $8.00
No. 15 Extra Heavy Steel Handle, ₩ gro. $15.00
Rival, ₩ gro.....$10.00
Taplin Mfg. Co.: ₩ gro.
No. 50 Small Family size.....$6.50
No. 100 Regular Family size.....$8.00
No. 102 Regular Family size, tinned.....$9.50
No. 150 Large Family size.....$15.00
No. 152 Large Family size, tinned.....$17.00
Lyon's, Standard size.....₩ doz. $1.75
Wonder (S. S. & Co.).....₩ gro. $7.50

Bellows—

Blacksmith, Standard List.70@70&10%
C. E. Jennings & Co.. Blacksmith..60&10%
C. E. Jennings & Co., Hand.....33⅓&5%

Blacksmiths—

Inch..	*3*	*3½*	*3¾*	*4*	*4½*	*5*
Each	*$3.50*	*3.75*	*4.25*	*4.80*	*5.35*	*6.15*

Extra Length:

Each	*$4.00*	*4.55*	*5.10*	*5.60*	*6.40*	*7.50*

Molders—

Inch..	*9*	*10*	*11*	*12*	*14*	*16*
Doz...	*$6.75*	*7.25*	*8.50*	*9.50*	*12.00*	*14.50*

Hand—

Inch...	*6*	*7*	*8*	*9*	*10*	*12*
Doz....	*$3.75*	*4.25*	*4.50*	*5.00*	*5.7*	*6.75*

Net Prices.

Bells—Cow—

Ordinary goods.....75&5@75&10%
High grade.....70@70&10%
Jersey.....75&10%
Texas Star.....50&10%

Door—

Abbe's Gong.....45%
Barton Gong.....55%
Home, R. & E. Mfg. Co.'s.....55&10%
Lever and Pull, Sargent s ....20&10&10%

Hand—

Hand Bells, Polished.....60@60&10%
White Metal.....55@55&10%
Nickel Plated.....50@50&10%
Swiss.....60%
Silver Chime.....33⅓&33⅓&10%

Miscellaneous—

Farm Bells.....lb. 2@2¼c
Steel Alloy Church and School.....60&10&5@60%
Wilmot & Hobbs Mfg. Co , Gongs.....70%

Belting—Rubber—

Agricultural (Low Grade).75&10@30%
Common Standard.....75@75&10%
Standard.....70@70&10%
Extra.....60&10&5%
High Grade.....0&10@50&10&5%
Boston Belting Co.:
Seamless Stitched, Imperial.....45%
Boston.....50&5%
Niagara.....60&5%

Leather—

Extra Heavy, Short Lap..50&10@60%
Regular Short Lap 60&10@60&10&5%
Standard.....60&10&10@70&5%
Light Standard.....70@70&10%

Cotton—

Rossendale-Reddaway B. & H. Co.:
Sphinx Brand.....60&10%
Durable Brand.....70%

Bench Stops—*See Stops, Bench*

Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters.....20%
Stoddard's Lightning Tire Upsetters.....40@50%

Bicycle Goods—

John S. Leng's Son's 1899 list:
Chain.....50%
Parts.....50%
Spokes.....50%
Tubes.....60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—*See Augers and Bits.*

Bit Holders—*See Holders.*

Blind Adjusters—*See Adjusters, Blind.*

Blind Fasteners—*See Fasteners, Blind.*

Blind Staples—*See Staples, Blind.*

Blocks—Tackle—

Common Wooden.....70@70&10%
Cleveland Steel.....50&10@60&10%
Ford's Star Brand Self Lubricating.....60&10%
Hollow Steel, Ford's Pat. Star Brand.....50&10%
Lane's Patent Automatic Lock and Junior.....30%
Stowell's Novelty, Mal. Iron.....50%
See also Machines, Hoisting.

Boards, Stove—

Zinc, Crystal, &c.....50&10%

Bolts—

Carriage, Machine &c.—

Common, list Jan. 30, '95..70&10&2½@..%
Norway Iron, $3.00, list Oct. 7, '84.. 75@75&10%
Phila. Eagle, $3.00 list May 24, '99.... 80@80&10%
Bolt Ends, list Jan. 30, '95..... 70&10&2½@..%
Machine, list Oct. 1, '99.70&10&2½@..%
Machine with C. P., C. & T. Nuts.70%

NOTE—*The rapid advances in manufacturers' prices enable the jobbers to cut prices freely.*

Door and Shutter—

Cast Iron Barrel, Round Brass Knob:

Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz...	*$0.33*	*.36*	*.45*	*.57*	*.80*

Cast Iron Spring Foot:

Inch.....	*6*	*8*	*10*
Per doz.....	*$1.00*	*1.25*	*1.75*

Cast Iron Chain, Flat, Japanned:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.85*	*1.20*	*1.50*

Cast Iron Shutter, Brass Knobs:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.60*	*.90*	*1.15*

Wrought Barrel Brass Knob:

Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz ..	*$0.44*	*.50*	*.61*	*.70*	*1.23*

Wrought Barrel .....70&10@75&5%
Wrought " Bronzed.50&5@50&10%
Wrought Flush. B. K..50&10@60&10%
Wrought Shutter...40&10&10@60&5%
Wrought Square Neck.....50@50&10%
Wrought Sunk.....50@50&10%
Ives' Patent Door.....60%

Stove and Plow—

Plow .....60&10@..%
Stove.....77½%

Tire—

Common.....77½%
American Screw Company:
Norway Phila., list Oct. 16, '84.....75%
Eagle Phila., list Oct. 16, '84.....85%
Bay State, list Dec. 28, '99.....77½%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84....75%
Eagle Phila., list Oct. 16, '84.....85%
Eclipse, list Dec. 28, '99.....77½%
Port Chester Bolt & Nut Company
Empire, list Dec. 28, '99.....77½%
Keystone Phila., list Oct. '84.....85%
Norway Phila., list Oct. '84.....75%

Borers, Tap—

Borers Tap, Ring, with Handle:

Inch.....	*1¼*	*1½*	*1¾*	*2*
Per doz...	*$3.50*	*4.50*	*5.00*	*6.50*
Inch		*2¼*		*2½*
Per Doz.....		*$7.50*		*10.25*

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each.....25@30%

Boring Machines—*See Machines, Boring.*

Boxes Mitre—

C. E. Jennings & Co.....40%
Seavey's, per doz., $30.....40%

Braces—

NOTE—*Most Braces are sold at net prices.*
Common Ball, American...$1.15@1.25
Barber's.....50&10&10@60&10%
Fray's Genuine Spofford s.....60%
Fray's No. 70 to 120, 81 to 135, 207 to 414.....60%
C. E. Jennings & Co.....50&10%
P., S. & W. Co., Peck's Patent50&10@60%

Brackets—

Wrought Steel.....70&10@75&5%
Bradley's Wire Shelf:
Full cases.....80%
Broken cases.....75&10%
Griffin's Pressed Steel.....75&10%
Griffin's Folding Brackets.....70&10%

Bright Wire Goods—*See Wire and Wire Goods.*

Broilers—

Wire Goods Co.....70@70&10%

Buckets, Well and Fire—*See Pails*

Bucks, Saw—

Hoosier.....₩ gro. $36.00

Bull Rings—*See Rings, Bull.*

Butts—Brass—

Wrought list Sept., '98.....40@40&5%
Cast Brass, Tiebout's.....50%

Cast Iron—

Fast Joint, Broad.....60@60&10%
Fast Joint, Narrow.....60@60&10%
NOTE—*Jobbers often sell the following at 70&5%:*
Loose Joint.....70@70&5%
Loose Pin.....70@70&5%
Mayer's Hinges.....70@70&5%
Parliament Butts.....70@70&5%

Wrought Steel—

Loose Joint.....
Table and Back Flaps..
Narrow and Broad.....
Inside Blind..... — *75@75&5%*
Loose Pin.....
Loose Pin, Ball and Steeple Tip
Bronzed Wrt. Nar. and Inside Blind Butts.....60&10@60&10&5%

Cages, Bird—

Hendryx, Brass:
3000, 5000, 1100 series.....5%
1200 series.....33⅓%
900, 300, 600 and 900 series.....40&10%
Hendryx Bronze:
700, 800 series.....40&10%
Hendryx Enameled.....40&10%

Calipers—*See Compasses.*

Calks, Toe and Heel—

Blunt, 1 prong.....per lb. 3½@4c
Sharp, 1 prong.....per lb. 4¼@4½c
Perkins' Blunt.....₩ ₺ 5 ¢
Perkins' Sharp.....₩ ₺ 5½¢

Can Openers—*See Openers, Can*

Cans, Milk—

	5	8	10 gal.	
Illinois Pattern.	$1 75	2.10	2.25	each.
Iowa Pattern...	....	2.40	2.60	each.
Buffalo Pattern.	....	2.30	2.50	each.
	30	30	40	qts.
New York Patt'rn	3.00	3.25	3.40	each.
Baltimore Patt'rn	2.50	2.85	3.10	each.

Cans, Oil—

Buffalo Family Oil Cans:

3	5	10 gal.
$48.00	60.00	108 gro.

Caps—Percussion—

Eley's E. B.....50c
G. D.....per M 38@43c
F. L.....per M 37@40c
G. E.....per M 47@50c
Musket.....per M 57@60c

Primers—

Berdan Primers, $1.00.....5%
B. L. Caps (Sturtevant Shells) $1.00.....5%
All other primers .....$1.10@$1.12

Carpet Stretchers—
See *Stretchers, Carpet.*

Cartridges—
B. B. Caps, Con., Ball Swgd.....$1.90
B. B. Caps, Round Ball... $1.12@1.18
Blank Cartridges:
32 C. F., $5.50.....10&5%
38 C. F., $7.00.....10&5%
22 cal. Rim, $1.50.....10&5%
32 cal. Rim, $2.75.....10&5%
Central Fire.....25%
Pistol and Rifle.....15&5%
Primed Shells and Bullets.....15&5%
Rim Fire Sporting.....50%
Rim Fire, Military.....15&5%

Casters—
Bed.....70@70&10%
Plate.....75@75&10%
Philadelphia.....75@75&10%
Boss.....70&10%
Boss Anti-Friction.....70&10%
Martin's Patent (Phoenix).....45%
Payson's Anti-Friction.....70&10&10%
Standard Ball Bearing.....45%
Tucker's Patent, low list.....80%

Cattle Leaders—
See *Leaders, Cattle.*

Chain—
American Coil, Less than Casks:
3-16 ¼ 5-16 ⅜ 7-16 ½ 9-16
7.30 5.40 4.40 3.55 3.40 3.30 3.25
⅝ ¾ ⅞ to 1¼ inch.
3.25 3.20 3.20 cents per lb.
Cask lots deduct 25c per 100 lbs.
German Coil, list July 24, '97, 60&10&10%
German Halter Chain, list July 24, '97.....60&10&10%
Traces, Western Standard: 100 pair
6¼—8-2, Straight, with ring...$36.00
6½—6-2, Straight, with ring.. $27.00
6½—8-2, Straight, with ring.. $31.00
6¼—10-2, Straight, with ring..$34.50
Add 2¢ per pair for Hooks.
Twist Traces 2¢ per pair higher than Straight Link.
Trace, Wagon and Fancy Chains, Eastern list.....60@60&5%
Jack Chain, list July 10, '93:
Iron.....60@60&10%
Brass.....60@60&10%
Safety Chain.....70@70&10%
Gal. Pump Chain.....lb 4½@4¾c
Covert Sad. Works:
Breast, Hitching and Rein Chains..50%
Covert Mfg. Co.:
Breast.....35&2%
Halter.....35&2%
Heel.....35&2%
Rein.....35&2%
Stallion.....35&2%
Oneida Community:
Eureka Coil and Halter.....60@60&5%
Niagara Coil and Halter.....60@60&5%
Niagara Cow Ties.....45&5@45&10&5%
Am. Coil and Halters....50&10&5@60%
Am. Cow Ties.....35&5@40&5%
Wire Goods Co.:
Dog Chain.....60%
Universal Dbl-Jointed Chain.....45%

Chalk—(From Jobbers.)
Carpenters', Blue.....gro. 45c
Carpenters', Red.....gro. 40c
Carpenters', White.....gro. 35c
See also Crayons.

Chalk Lines—See *Lines.*

Checks, Door—
Bardsley's.....40&10%
Columbia.....50&10%
Eclipse.....60@60&10%

Chests, Tool—
American Tool Chest Co.:
Boys' Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemens' Chests, with Tools.....30%
Farmers', Carpenters', etc., Chests, with Tools.....30%
Machinists' and Pipe Fitters' Chests, Empty.....80%
C. E. Jennings & Co.'s Machinists' Tool Chests.....20%

Chisels—
Socket Framing and Firmer
Standard List.....70&10@...%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Socket Firmer No. 10.....60&10%
C. E. Jennings & Co. Socket Framing No. 15.....60&10%
Swan's.....70&5%
L. & I. J. White.....30@30&5%

Tanged—
Tanged Firmers.....40c&5@40&10%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Nos. 191, 181...25%
L. & I. J. White, Tanged.....25&5%

Cold—
Cold Chisels, good quality, lb. 14@16c
Cold Chisels, fair quality.....lb. 12c
Cold Chisels, ordinary.....lb. 8@9c

Chucks—
Beach Pat., each $8.00.....20%
Massey's Planer and Milling.....15@30%
Skinner Patent Chucks:
Combination Lathe Chucks.....40%
Drill Chucks, Patent and Standard...30%
Drill Chucks, New Model.....25%
Independent Lathe Chucks.....40%
Improved Planer Chucks.....20%
Universal Lathe Chucks.....40%
Face Plate Jaws.....35%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination.....40%
Czar Drill.....30%
Geared Scroll.....30%
Independent.....40%
Union Drill.....30%
Universal.....40%
Face Plate Jaws.....35%

Clamps—
Adjustable, Hammers'.....20@20&5%
Cabinet, Sargent's.....50&10%
Carriage Makers', P., S. & W. Co. 40&10%
Carriage Makers' Sargent's.....50&10%
Beaty, Parallel.....33⅓&10%
Lineman s, Utica Drop Forge & Tool Co.....40%
Saw Clamps, see *Vises, Saw Filers'.*

Cleaners Walk—
Star Socket, All Steel.....₩ doz. $4.00 net
Star Shank, All Steel.....₩ doz. $3.75 net
W. & C. Snapr, All steel, 7¼ in. ₩ doz., $3.35; 8 in., $3.40; 8½ in., $3.50.

Cleavers, Butchers'—
Foster Bros.....30%
New Haven Edge Tool Co.'s.....40&10%
Fayette R. Plumb.33⅓&10@33⅓&10&5%
P., S & W.....33⅓&5@33⅓&10%
L. & I. J. White.....25%

Clippers—
Chicago Flexible Shaft Company
Handy Toilet.....₩ doz. $7.20
Mascotte Toilet.....₩ doz. $3.40
Monitor Toilet.....₩ doz. $9.00
Stewart's Patent.....₩ doz. $10.00

Clips Axle—
Eagle and Superior ¼ and 5-16 inch.....70&10%
Norway, ¼ and 5-16 inch..70@70&10%

Cloth and Netting, Wire
—See *Wire, &c.*

Cocks, Brass—
Hardware list (Globe, Kerosene, Racking, &c.).....65&10%

Coffee Mills—See *Mills, Coffee.*

Collars Dog—
Brass, Pope & Stevens' list.....40%
Embossed, Glit, Pope&Stevens' list30&10%
Leather Pope & Stevens' list.....40%

Compasses Dividers, &c.
Ordinary Goods.....70&10@75%
Bemis & Call Hdw. & Tool Co.:
Dividers.....65%
Calipers, Call's Patent Inside.....55%
Calipers, Double.....65%
Calipers, Inside or Outside.....65%
Calipers, Wing.....60%
Compasses.....50%
J. Stevens A. & T. Co.....25&10%

Compressors, Corn Shock—
J. B. Hughes' ₩ doz.....$3.00

Conductor Pipe, Galvanized—
Factory Shipments to Jobbers:

Territory.	Carload. Loose.	L. C. L. Nested.
Eastern....	*75&10%*	*75&5%*
Central....	*75&7½%*	*75&2½%*
Southern...	*75&5%*	*75%*
S. Western.	*75%*	*70&10&2½%*

Terms, 2% for cash.
See also *Eave Trough and Elbows*

Coolers, Water—

Nos.	2	3	4	6
Labrador 8 gal.	$11.50	$14.00	$17.50	$20.00
Nos	2	3	6	8
Iceland.. 10 14 gal.	$23.00	$25.00	$30.00	$37.50
	$57.00	$72.00		

Coopers' Tools—
See *Tools, Coopers'.*

Cord—

Sash—
Braided, Drab.....lb. 25c
Braided, White, Common, lb 17½@18c
Cable Laid Italian..lb. A, 18c; B, 16c
Common India.....lb 9 @9½c
Cotton Sash Cord, Twisted....12@16c
Patent Russia.....lb. 12½@13c
Cable Laid Russia.....lb. 13½@14c
India Hemp, Braided.....lb 14@15c
India Hemp.....lb. 10@12c
Patent India.....lb. 10@12c
Pearl Braided, cotton.....₩ lb 17@18¢
Massachusetts, White.....₩ lb 24½¢
Massachusetts, Drab.....₩ lb 26½¢
Eddystone Braided Cotton.....₩ lb 19¢
Harmony Cable Laid Italian.....₩ lb 18¢
Ossawan Mills:
Crown, Solid Braided White...₩ lb 18¢
Braided, Giant, White.....₩ lb 17¢
Peerless:
Cable Laid Italian.....16¢
Cable Laid Russian.....14¢
Cable Laid India.....12¢
Braided India.....18¢
Phœnix, White.....19¢
Samson:
Braided, Drab Cotton.....₩ lb 32½¢
Braided, Italian Hemp.....₩ lb 32½¢
Braided, Linen.....₩ lb 49¢
Braided, White Cotton, Spot.₩ lb 28½¢
Silver Lake:
A quality, Drab, 40¢.....15%
A quality, White, 35¢.....15%
B quality, Drab, 35¢.....15%
B quality, White, 30¢.....15%
Italian Hemp, 40¢.....15%
Linen, 57½¢.....15%

Wire, Picture—
Braided or Twisted.....85@85&10%
Note.—There is a good deal of confusion in lists, some using old list and others the new list.

Corn Knives and Cutters
—See *Knives, Corn.*

Corn Planters—
See *Planters, Corn—*

Crackers, Nut—
Little Giant.....₩ gr. $24.00

Cradles—
Grain.....50%

Crayons—
White Round Crayons, gross.5½@6c
Cases, 100 gro., $5.00, at factory.
D. M. Steward Mfg. Co.
Metal Workers' Crayons.gr. $2.50
Soapstone Pencils, round, flat or square.....gr. $1.50
Rolling Mill Crayons.....gr. $2.50
Railroad Crayons (composition) gr. $2.00
Case lots 20%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crooks, Shepherds'—
Fort Madison, Heavy.....₩ doz. $7.00
Fort Madison, Light.....₩ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—
Victor Garden.....₩ doz. $10.00

Cutlery Table—
"Gross Goods," list Jan., '01...net&5%
Extra 10% to purchasers of $250 worth in six months.

Cutters—

Glass—
Smith & Hemingway Co.....30%

Meat—
Hale's...Nos. 11 & 111 12 & 112 13 & 113
Per doz... $10.80 15 20 18.00
American.....30%

Nos.	1	2	3	4	5	6
Each	$5	$7	$10	$25	$50	$60

Connecticut:

Nos.	0	1	8	10	12
Each	$1.75	2.25	3.00	3.00	3.50

Enterprise.....25@25&7½%

Nos.	5	10	12	22	32
Each	$2	$3	$2.50	$4	$6

Dixon's, ₩ doz.....33⅓&10%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Home No. 1, ₩ doz. $22.75.....50&10%
Little Giant, ₩ doz.....33⅓&33⅓&5%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$71.00	$68.00

Sterling.....33⅓&5%

Nos	1	2
Each	$2.00	$2.50

Miles' Challenge, ₩ doz.....45@45&10%

Nos.	1	2	3
	$22.00	$30.00	$40.00

New Triumph No. 605, ₩ doz. $24.00.....33⅓&5%
Woodruff's, ₩ doz.....40%

Nos	100	150
	$15.00	$18.00

Chadborn's Smoked Beef Cutter, ₩ doz. $60.00
Enterprise Beef Shavers.....25@30%

Slaw and Kraut—
Henry Disston & Sons:
Slaw, Corn Grater, &c.....40%
Kraut Cutters 24 x 7, 26 x 8, 30 x 9.55%
Kraut Cutters 36 x 12, 40 x 12.....40%
Tucker & Dorsey Mfg. Co.:
Kraut Cutters.....40%
Slaw Cutters, 1 Knife, ₩ gr....$18@$20
Slaw Cutters, 2 Knife, ₩ gr....$22@$36

Tobacco—
All Iron, Cheap.....doz. $1.25@$1.50
Enterprise.....25@30%
National, ₩ doz. $21.00.....40%
Sargent's, ₩ doz. $24.00.....45&10%

Washer—
Appleton's, ₩ doz. $16.00.....50&10&10%
Bonney's.....₩ doz. $4.75

Diggers, Post Hole, &c.—
Dalbey Post Hole Auger..per doz. $10.00
Iwan's Improved Post Hole Auger....40%
Iwan's Perfection Post Hole Digger, ₩ doz. $9.00
Kohler's Universal.....₩ doz. $14.00
Kohler's Little Giant.....₩ doz. $15.00
Kohler's Hercules.....₩ doz. $12.00
Kohler's Invincible.....₩ doz. $10 00
Kohler's Rival.....₩ doz. $9.00
Kohler's Pioneer.....₩ doz. $9.00
Never-Break Post Hole Diggers, ₩ doz. $24.00.....60%
Samson, ₩ doz. $34.00.....25%

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—
See *Checks, Door.*

Door Springs—
See *Springs, Door.*

Drawers, Money—
Tucker's Pat. Alarm Till No. 1, ₩ doz. $18; No. 2, $15 No. 3, $14; No. 4, $18.

Drawing Knives—
See *Knives, Drawing.*

Drills and Drill Stocks—
Common Blacksmiths' Drill..each $1.50@$1.75
Blacksmiths' Self-feeding.....each $3.75@4.00
Breast, Millers Falls, each $3.00..15&10%
Breast, P., S. & W.....30@30&10%
Goodell Automatic Drills..40&5@40&10%
Johnson's Automatic Drills Nos. 2 and 3.....16⅔%
Johnson's Drill Points.....25&10%
Ratchet, Curtis & Curt's.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....20@25%
Ratchet, Whitney's, P. S. & W.....40&10%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00.....33⅓%

Twist Drills—
Standard List.....60&5@65&5%

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—
See *Pans, Dripping.*

Drivers, Screw—
Balsey's Screw Holder and Driver, ₩ doz. 2½-inch, $6; 4-in., $7.20 6-in., $9..40%
Buck Bros.....30%
Buck Bros' Screw Driver Bits.....27½%
Champion.....40&10%
Douglass Mfg. Co.....20@20&10%
Fray's Hol. H'dle Sets, No. 3, $12.00 50%
Gay & Parsons' Ratchet.....35%
Goodell's Automatic 50&10&10@50&10&10&5%
Mayhew's Black Handle.....50%
Mayhew's Monarch.....45&10%
New England Specialty Co.....50&10%
Sargent & Co.'s:
Nos. 1, 50, 55 and 60.....50&10&10%
Nos. 20 and 40.....60⅔&10%
Screw Driver Bits.....₩ doz. 50@70¢
Smith & Hemenway Co.....40&5%
Stanley's R. & L. Co.'s:
No. 64, Varnished Handles.....60&10%
No. 86.....70&10%
Swan's:
Nos. 65 to 68.....50%
No. 40.....40&10%
Nos. 25, 35 and 45.....20&10&10%

Eave Trough, Galvanized
Factory Shipments to Jobbers.

Territory.	Carload.	L. C. L.
Eastern.....	*80&10&5%*	*80&10%*
Central.....	*80&10&2½%*	*80&7½%*
Southern.....	*80&10%*	*80&5%*
S. Western...	*80&2½%*	*80%*

Terms, 2% for cash.
See also *Conductor Pipe.*

Egg Beaters—See *Beaters, Egg*

Egg Openers—
See *Openers, Egg.*

Elbows and Shoes—
Factory shipments to jobbers.....60&10&5%
Perfect Elbows (S. S. & Co.).....40%

Emery, Turkish—

	4 to 46	5 4 to 150	Flour
Kegs.....lb.	*5c*	*5¼c*	*5¾c*
¼ Kegs....lb.	*5¼c*	*5¾c*	*5¾c*
½ Kegs....lb.	*6c*	*6c*	*c*
10-lb cans, 10 in case.....	*6¼c*	*7c*	*6c*
10-lb. cans, less than 10	*10c*	*10c*	*8c*

NOTE.—*In lots 1 to 3 tons a discount of 10% is given.*

Enameled and Tinned Ware—See *Ware, Hollow.*

Escutcheon Pins—
See *Pins, Escutcheon.*

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—
Zimmerman's.....50&10%

Faucets—
Cork Lined.....70c&5@70c&10c&5%
Metallic Key, Leather Lined.....70@70&10%
Red Cedar.....60@60&5%
B. & L. B. Co.:
West's Lock, Open and Shut Key 50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Metal Key.50&10%
John Sommer's Duplex Metal Key....60%
John Sommer's Diamond Lock.....40%
John Sommer's I. X. L. Cork Lined..50%
John Sommer's Reliable Cork Lined 50&10%
John Sommer's Common Cork Lined.70%
John Sommer's Chicago Cork Lined..60%
John Sommer's O. K. Cork Lined.....50%
John Sommer's Perfection Cedar.....40%
Star.....60@60&5%
Star, Metal Plug new list.....40@40&5%
Lockport, Metal Plug, reduced list.60&5%
McKenna, Brass:
Burglar Proof, N. P.....35%
Improved, ¾ and ⅞ inch.....35%
Self Measuring:
Enterprise, ₩ doz. $36.00.....40%
Lane's, ₩ doz. $36.00.....40&10%
National Measuring, ₩ doz. $66.00...40%

Felloe Plates—
See *Plates, Felloe.*

Files—Domestic—
List revised Nov. 1, 1899.
Best Brands.....70@75&5%
Good Brands.....75&10@75&10&10%
Fair Brands.....80@80&10%
Second Quality.....80&10@80&25%

Imported—
Stubs' Tapers, Stubs' list, July 24, '97.....25%

Fixtures, Grindstone—
Net Prices:

Inch....	*15*	*17*	*19*	*21*	*24*
Per doz.	*$2.60*	*2.75*	*3.00*	*3.50*	*4.40*

Stowell's Giant Grindstone Hanger.... ₩ doz. $6.00
Stowell's Grindstone Fixtures.....50%
P., S. & W. Co.....50&10&10%
Reading Hardware Co.....30&20&10%
Sargent's.....60&10&10%

Fodder Squeezers—
See *Squeezers, Fodder.*

Forks—
Sept. 1, 1900, list.
Grain or Barley Forks, 16 to 20 inches.....70c&5%
Hay, 2 tine.....65%
Hay, 3 tine.....66⅔%
Hay, 4 tine, Header and Barley Forks, 13 to 16 inches.....66⅔%
Manure, 4 tine.....70%
Manure, 5 and 6 tine.....70%
Spading.....70c&5%
Iowa Dig-Easy Potato.....65%
Victor, Hay.....60&5%
Victor, Manure.....70%
Victor, Header.....60&30%
Champion, Hay.....66⅔%
Champion, Manure.....70%
Columbia, Hay.....60%&5%
Columbia, Manure.....70%
Columbia, Spading.....70%
Hawkeye Wood Barley 4 tine ₩ doz. $5.00; 6 tine, $6.00.
W. & C. Potato Digger.....65%
Acme Hay.....60&20&7½%
Acme Manure.....60&25%
Dakota Header.....70&10&2½%
Jackson Steel Barley.....70&10&2½%
Kansas Header.....65&20%
W. & C. Favorite Wood Barley 4 tine, ₩ doz., $5.00; 5 tine, $6.00
Plated.—See *Spoons.*

Frames—

Saw—
Red, Polished and Varnished..doz. $1.15@$1.50
White.....doz. 75@80c

Screens and Frames—
See *Screens.*

Freezers, Ice Cream—
Qts... 2 3 4 6 8 10
Best. $1.15 1.65 1.95 2.40 3.40 4.20
Good $1 25 1.40 1.70 2.15 2.75 3.75
Fair. $1.00 1.10 1 30 1.75 2.30 2.90

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse—
Per 1000 Feet.
Hemp Fuse.....$2.60
Cotton Fuse.....2.90
Single Taped Fuse.....3.25
Double Taped Fuse.....4.20
Triple Taped Fuse.....5.00
Single

Gates, Molasses and Oil—
Stebbins'.....80&10@80&10&10%

Gauges—
Marking, Mortise, &c.....55&10@55&10&10%
Barrett's Comb. Roller Gauge..... ₩ doz. $6.75@7.25
Stanley R. & L. Co.'s Butt & Babbet Gauge.....20&10%

Wire, Brown & Sharpe's.....35%
Wire, Morse's.....35%
Wire P., S. & W. Co.....10&10&5%

Gimlets—

Nail, Metal, Assorted.gro. $1.40@1.75
Spike, Metal, Assorted gro. $3.00@3.50
Nail, Wood Handled, Assorted. gro. $4.00@4.25
Spike, Wood Handled, Assorted gro. $5 00@5.25

Glass, American Window

Jobbers' List, Sept. 1, 1900.
Small lots from store:
Single and Double Strength, all sizes.....85&5%
10% to be added on all first quality, both Single and Double.

Glue—Liquid, Fish—

List A, Bottles or Cans, with Brush. 57½@50%
List B, Cans (½ pts., pts., qts.)..... 35@48%
List C, Cans (½ gal., gal.) ....25@45%

Glue Pots—See *Pots, Glue.*

Grease, Axle—

Common Grade.....gro. $5.00@6.00
Dixon's Everlasting....10-lb pails, ea. 85¢
Dixon's Everlasting, in bxs..₩ doz. 1 lb $1.20; 2 lb $2.00
Snow Flake: 1 qt. cans..per doz. $2.00; 2 qt., $3.20; 1 gal. cans per doz. $6.00; 3 gal. $16.00; 5 gal. $24.00 } 10%

Grindstone Fixtures—

See *Fixtures, Grindstone.*

Guards, Snow—

Cleveland Wire Spring Co.:
Galv. Steel ₩ 1000.....$9.00
Copper ₩ 1000.....$18.00

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—

gro.
Peg Patent, Leather Top..$4.90@5.25
Peg Patent, Plain Top....$3.50@3.75
Sewing, Brass Ferrule. ....$1.50@1.60
Saddlers', Brass Ferrule..$1.35@1.45
Peg, Common.....$1.35@1.35
Brad, Common.....$1.50@1.75

Halters and Ties—

Covert Mfg. Co., Web.....45&2%
Covert Mfg. Co., Jute Rope.....45&2%
Covert Mfg. Co., Sisal Rope.....30&2%
Covert's Saddlery Works', 98 list, W-b.. 60&10¢
Covert's Saddlery Works, Leather60&10%
Covert's Saddlery Works, Jute....60&5%
Covert's Saddlery Works, Sisal.....60%
Covert's Saddlery Works, Manila..60&5%
Covert's Saddlery Works, Cotton.....70%

Hammers—

Handled Hammers—

Heller's Machinists'.....50@50&5%
Heller's Farriers.....50@50&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75.....40&10¢
Peck, Stow & Wilcox.....40@40&10%
Fayette R. Plumb:
Plumb, A. E. Nail.....40&10@50%
Engineers' and B. S. Hand..... 60&10&7½%
Machinists' Hammers..... 60&10&7½%
Riveting and Tinners'.....50@50&10%
Sargent's C. S. New List.....45&10%

Heavy Hammers and Sledges—

3 lb. and under...lb. 45c
3 to 5 lb.....lb. 36c } 30¢&10@30
Over 5 lb.....lb. 30c } &10&10%
Wilkinson's Smiths'.....9½c@10c lb.

Handcuffs and Leg Irons

See *Police Goods.*

Handles—

Agricultural Tool Handles—

Axe, Pick, &c.....60@60&10%
Hoe Rake, Fork, &c.....60@60&10%
Shovel, &c., Wood D Handle.50@50&5%

Cross-Cut Saw Handles—

Atkins'.....40&5%
Champion.....45@45&10%
Disston's.....50%

Mechanics' Tool Handles—

Auger, assorted.....gro. $2.50@$2.50
Brad Awl.....gro. $1.35@$1.50
Chisel Handles:
Apple Tanged Firmer, gro. ass'd. $2.25@$2 35; large, $2.50@$3.60.
Hickory Tanged Firmer, gro. ass'd. $1.75@$2.20; large, $3 50@$3.70.
Apple Socket Firmer, gro. ass'd, $1.70@$1.85; large, $2 00@$2 25
Hickory Socket Firmer, gro ass'd. $1.60 @ $1.75; large, $1.75 @ $2.00
Hickory Socket Framing,gro.ass'd. $2.50@$2.75; large, $2.65@$2.85
File, assorted.....gro. $1.60@$1.15
Hammer, Hatchet, Axe, &c.....60%
Hand Saw, Varnished, doz. 70@75c
Not Varnished.....55@60c
Plane Handles:
Jack, doz.25c; Jack Bolted..55@60c
Fore, doz. 35@38c; Fore, Bolted.. 70@75c

Hangers—

Barn Door, New Pattern, Round Groove, Regular:

Inch	3	4	5	6	8
Doz	$0.85	1.30	1.60	1.95	2.45

Barn Door, New England Pattern, Check Back, Round Groove, Regular:

Inch	3	4	5	6
Doz	$1.45	1.90	2.55	3.10

Chicago Spring Butt Co.:
Friction.....25%
Oscillating.....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator.....40%
Railroad.....55%
Cronk Hanger Co.:
Loose Axle.....60%
Roller Bearing.....60&10%
Lane Bros.:
Parlor, Ball Bearing.....$4.00
Parlor, Standard.....$3.25
Parlor, New Model.....$2.75
Parlor New Champion.....$2 40
Barn Door, Standard.....60&10%
Covered.....50&10&10&5%
Special.....60&10%
Lawrence Bros.:
Advance.....60%
Cleveland.....60&10%
Crown.....60%
New York.....60%
Peerless.....60&10%
Sterling.....60%
McKinney Mfg. Co.:
No. 2, Standard, $18.....60&10%
No. 1, Special, $13.....60&10%
Stowell Mfg. and Foundry Co.:
Atlas.....60%
Baggage Car Door.....50%
Climax Anti-Friction.....50%
Elevator.....40%
Interstate.....50&10%
Magic.....50%
Matchless.....60%
Nansen.....60&10%
Parlor Door.....50%
Railroad.....50&10%
Street Car Door.....50&10%
Steel, Nos. 300, 400, 500.....40&15%
Zenith for Wood Track.....50&10%
Taylor & Boggs Foundry Co.:
Kidder's.....50@50&10%
Van Wagoner & Williams Hdw Co.:
American Trackless.....33⅓&10%
Wilcox Mfg. Co.:
Bike Roller Bearing.....60&10%
C. J. Roller Bearing.....60&10%
Cycle Ball Bearing.....50%
Dwarf Ball Bearing.....40%
Ives, Wood Track.....60&10%
L. T. Roller Bearing.....60&10&5%
New Era Roller Bearing.....50&10%
O. K. Roller Bearing.....60&10&5%
Prindle, Wood Track.....60%
Richards' Wood Track.....60%
Richards' Steel Track.....50&10%
Spencer Roller Bearing.....60&10%
Tandem Nos. 1 and 2.....60%
Underwriters' Roller Bearing....40%
Wilcox Auditorium Ball Bearing.20%
Wilcox Barn Trolley No. 123.....40%
Wilcox Fire Trolley, Roller Bearing.....30%
Wilcox Le Roy Noiseless Ball Bearing.....40%
Wilcox New Century.....50&10&10%
Wilcox Trolley Ball Bearing....40%

Extra 5@10% often given.

Harness Menders—See *Menders.*

Harness Snaps—See *Snaps.*

Hasps—

McKinney's Perfect Hasp ₩ doz. 40&10%
Wrought Hasps, Staples, &c.—See *Wrought Goods.*

Hatchets—

Best Brands.....40&10@50%
Cheaper Brands....50&10@50&10&5%
Note.—Net prices often made.

Hay and Straw Knives—

See *Knives.*

Hinges—

Blind and Shutter Hinges—

Surface Gravity Locking Blind: (Victor; National; 1838 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.	1	3	5
Doz pair	$0.75	1.45	2.90

Mortise Shutter: (L. & P., O. S., Dixie, &c.)

No.	1	1½	2	2½
Doz. pair	$0.60	.55	.52	.45

Mortise Reversible Shutter, (Buffalo, &c.)

No.	1	1½	2
Doz. pair	$0.65	.60	.55

Parker.....70@75%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Reading's Gravity.....75&10%
Sargent's, Nos. 1, 3, 5.....66⅔&10%
Sargent's, Nos. 11 & 13.....70&10%
Wrightsville H'dware Co.:
O. S. Lull & Porter.....80&2½%
Acme, Lull & Porter.....75&10%
Queen City Reversible.....75&10%
Stenger's Positive Locking, Nos. 1 & 3.....70&10&5%
Shepard's Noiseless, Nos. 60, 65, 55.....70&10%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&7½%
1838, Old Pat'n. Nos. 1, 3 & 5.....75&7½%
Tip Pat'n, Nos. 1, 3 & 5.....75&7½%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....75&7½%
Shepard's Double Locking, Nos. 20 & 25.....70&10%
Champion Gravity Locking, No. 75.....75&7½%
Steamboat Gravity Locking, No. 10.....75&7½%
Pioneer, Nos. 000, 45 & 5½.....75&7½%
Empire, Nos. 101 & 103.....70&7½%
W. H. Co.'s Mortise Gravity Locking, No 2.....60&10%
Stanley's Steel Gravity Blind Hinges, ₩ doz. sets $1.30.....30&10%

Gate Hinges—

Clark's or Shepard's—Doz. sets:

No.	1	2	3
Hinges with Latches	$1.90	2.50	2.85
Hinges only	1.20	1.90	2.20

Latches only..... 0.65 0.65 0.95
New England:
With Latch.....doz. ....@$1.55
Without Latch ....doz. ....@$1.25
Reversible Self-Closing:
With Latch.....doz. ....@$1.80
Without Latch.....doz. ....@$1.45
Western:
With Latch.....doz. $1.40@1.75
Without Latch.....doz. $0.95@1.20
Wrightsville H'dware Co.:
Shepard's or Clark's, Nos. 1 & 2..65&2½%
Shepard's or Clark's, No. 3 .....55&5%

Spring Hinges—

Holdback, Cast Iron..gro. $8.00@8.25
Non-Holdback, Cast Iron..... gro. $6.75@7.25
J. Bardsley
Bardsley's Patent Checking.....15%
Bommer Bros.:
Bommer's.....33⅓%
Chicago Spring Butt Co.:
Chicago.....20%
Floor Hinge.....40%
Garden City Engine House.....20%
Keene's Saloon Door.....20%
Triple End.....40%
Hoffman Hinge & Foundry Co.:
No. 70 & 80 Holdback Detachable $8.50
Lawson Mfg. Co.:
Matchless.....30%
Matchless Pivot.....35%
Payson Mfg. Co.:
Oblique.....50&10%
Stower Mfg. Co.:
Ideal, No. 16, Detachable, ₩ gr. $12.50
Ideal, No. 4.....₩ gr. $9.00
New Idea No. 1.....₩ gr. $9.00
New Idea, Double Acting.....45%
Van Wagoner & Williams Hdw. Co.:
Acme, Wrt. Steel.....30%
Acme, Brass.....20%
American.....30%
Columbia, No. 14.....₩ gr. $9.00
Columbia, No. 18.....₩ gr. $25.00
Columbia, Adjustable.....30%
Gem, new list.....25%
Clover Leaf.....₩ gr. $12.50
Oxford new list.....25%

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—

Strap and T Hinges, &c., list Mar. 15, 1898:
Light Strap Hinges..66⅔%
Heavy Strap Hinges..70%
Light T Hinges....50&10%
Heavy T Hinges....60&10%
Extra Heavy T Hinges... Extra 66⅔% 25&10@25&10¢
Hinge Hasps.....45 5%
Cor. Heavy Strap 70%
Cor. Ex. Heavy T.....66⅔%
Screw Hook and Strap. 6 to 12 in..lb 2¾@3 c; 14 to 20 in..lb. 2½@2¾c; 22 to 36 in..lb. 2¼@2½c
Screw Hook and Eye:
¾ to 1 inch.....lb. 5¾@6 c
⅝-inch.....lb. 6¾@7 c
½-inch.....lb. 8¾@9 c

Misc llaneous—

Hoffman's Steel Spring Butt Hinges.....40&10%
Hoffman's Offset Refrigerator Hinges.....40&10%

Hods, Coal—

	15	16	17	18 inch.
Galv. Open	$2 05	2.20	2.45	2 65 ₩ doz.
Jap. Open	$1.55	1.70	1.85	2.05 ₩ doz.
Galv. Fun'el	$2.75	2.90	3.10	3 45 ₩ doz.
Jap. Funnel	$2.00	2 15	2.35	2.70 ₩ doz.

Hoes— Eye—

Scovil and Oval Pattern..... 60&5@60&10&5%
Grub, list Feb. 23, 1899. 70&5@70&10%
D. & H. Scovil 35%

Handled—

Sept. 1, 1900, List:
Field and Garden.....75&2%
Ladies', Boys', Toy and Onion... 70&10&10%
Street and Mortar .....75&7½&2%
Cotton.....70&10&10&5&2%
Planters'.....70&30%
Weeding.....75%
Note.—Manufacturers and jobbers use a diversity of lists, and often sell at net prices
Ft. Madison Crucible Garden Hoe..... 75&2%
Ft. Madison Crescent Cultivator Hoe, per doz .....75&10&2%
Ft. Madison Mattock Hoes:
Regular Weight.....₩ doz. $4.50
Junior Size.....₩ doz. $4.00
Ft. Madison Sprouting Hoe, ₩ doz. $4.80
Ft. Madison Dixie Tobacco Hoe..75&20%
Kretsinger's Cut Easy, per doz....75&2%
Warren Hoe.....60%
W. & C. Ivanhoe.....75&2%
B. B. Cultivator Hoe.....75&10%
Acme Weeding.....75&10%
W. & C. Lightning Shuffle Hoe, ₩ doz. $5.50

Hog Rings and Ringers—

See *Rings and Ringers.*

Hoisting Apparatus—

See *Machines, Hoisting.*

Hollow Ware—

See *Ware, Hollow.*

Holders— Bit—

Angular, ₩ doz. $24.00.....45&10%

Door—

Empire.....50%

File and Tool—

C. E Jennings & Co. Model Tool Holders.....33⅓%
Nicholson File Holders and File Handles.....33⅓%

Hooks—Cast Iron—

Bird Cage, Reading..... } .50&10@60%
Bird Cage, Sargent's List... }
Clothes Line, Hoffman's.....40&10%
Clothes Line, Sargent's List50&10&5&10%
Ceiling, Sargent's List.....40&10%
Clothes Line, Stowell's.....70%
Clothes Line, Reading List 65&10@65&10&10%
Coat and Hat, Stowell's 70%
Coat and Hat, Reading.....70@75%
Coat and Hat, Sargent's List.....45&10%
Coat and Hat, Wrightsville .....65&10%
Harness, Reading List.....70&10@75%

Wire—

Belt.....80%
Wire C. & H. Hooks.60¢10@60¢10¢10%
Atlas, Coat and Hat:
Single Cases.....45%
10 Case Lots.....45&10%
Czar Harness.....50&10&5%
Wire Coat and Hat:
Acme.....50&10&5%
B. B.....50&10&5%
V Brace, Chief and Czar.....50&10&5%
Gem.....50%
Bright Wire Goods—See *Wire.*

Wrought Iron—

Box, 6 in., per doz. $1.50; 8 in., $1.75; 10 in., $2.00.
Cotton..... doz. $1.05@1.25
Wrought Staples, Hooks, &c.— See *Wrought Goods.*

Miscellaneous—

Bush, Light, doz. $5.50; Medium, $6.00; Heavy, $6.50
Grass.....Nos. 1 2 3 4
Best..... .... $1.50 1 75 2.00
Common.. $1.40 1.40 1.50 1.75
Potato and Manure 70%
Whiffletree..... lb. 4¾c
Hooks and Eyes:
Brass..... 60¢10¢10@70%
Malleable Iron .....70¢5@70¢10%
Covert Saddlery Works' Self Locking Gate and Door Hook..... 60&10%
Crown Picture.....50&10%
Bench Hooks—See *Bench Stops.*
Corn Hooks—*See Knives, Corn.*

Horse Nails—See *Nails, Horse*

Horseshoes—

See *Shoes, Horse.*

Hose Rubber—

Garden Hose, ¾-inch:
Competition.....ft. 4¼@ 4¾c
3-ply Standard ..... ft. 5 @ 6 c
4-ply Standard.....ft. 8 @ 9 c
3-ply extra.....ft. 9 @10 c
4-ply extra ..... ft 11 @12 c
Cotton Garden, ¾-in., coupled:
Low Grade ..... ft. 6 @7 c
Fair quality.....ft. 8 @9 c

Irons—Sad—

From 4 to 10..... lb 3@3½c
B. B. Sad Irons..... lb. 3½@4c
Chinese Laundry..... lb. 5@5½c
Chinese Sad..... lb. 3½@3½c
Mrs. Potts', per set:

Nos.	50	55	60	65
	67@72c	69@69c	77@82c	71@79c

New England Pressing..lb. 3½@3¾c

Soldering—

Soldering Coppers, 1 ₩ 1¼ lb., 21@22c.; 2 lb., 19 @ 21c
Covert Mfg. Co.....30&2%
Smith & Hemenway Co's Sets..... 75%

Pinking—

Pinking Irons.....doz. 50@60c

Jack Screws—See *Screws.*

Jacks, Wagon—

Covert Mfg. Co., Steel.....45&2%
Daisy.....70%
Lockport.....40@40&10%
Victor.....60%
Lane's Steel.....33⅓&5%

Kettles—

Brass, Spun, Plain..... 20@25%
Enameled and Cast Iron—See *Ware, Hollow.*

Knife Sharpeners—

See *Sharpeners, Knife.*

Knives—

Butcher, Shoe, &c.—

Dick's Butcher Knives..... 40%
Foster Bros.' Butcher, &c..... 30%
Smith & Hemenway Co.....40&10%
Hay and Straw—See *Hay Knives.*

Corn—

Ft. Madison Cut-Easy, ₩ doz.....$3.25
Withington Acme, ₩ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—

Standard List.....70&5@70¢10%
Adjustable Handle.....25@33⅓%
Bradley's.....35%
C. E. Jennings & Co. Nos. 45, 46..40&10%
Jennings & Griffin.....66⅔&5%
Swan's.....70&10&2½%
Watrous.....30&10@40%
L. & I. J. White.....20&5@25%
Cantelo's Folding.....50@50&5%

Hay and Straw—

Lightning Pattern....per doz. $6.00 @6.25
Iwan's Sickle Edge..... ₩ doz. $10.00
Iwan's Serrated..... ₩ doz., $10.50
Lightning.....$7.50
Maine..... ₩ doz. $8.50

Mincing—

Buffalo..... ₩ gro. $15.00

Miscellaneous—

Farriers'..... doz. $2 00@3.00
Wostenholm's..... ₩ doz. $3.00@3.25

Knobs—

Base, 2¼-inch, Birch, or Maple. Rubber tip, gro .....$1.20@1.30
Carriage, Jap, all sizes...gro. 30@35c
Door, Mineral.....doz. 60@65c
Door, Por. Jap'd .....doz. 70@75c
Door, Por. Nickel....doz. $2 00@3.10
Bardsley's Wood Door, Shutter, &c...15%
Picture, Sargent's.....60&10%
Snow's Victor.....50&10%

Ladders, Step—

Handy Ladder Works:

Length. Feet.	Extended Reach. Feet.	Use	Shipped Ready for Per doz.	K. D., Per doz.
4	7		$16.00	$14.00
5	9		19.50	17.00
6	11		24 50	21.00
7	13		29.50	25.00
8	15		34.00	29.00
9	17		39.00	32.00
10	19		43 00	35.00
11	21		48 50	40.00
12	23		51.00	45.00

Ladies— Melting—

L. & G. Mfg. Co. 60%
P., S. & W. ..... 40@40&10%
Reading ..... 50&10%
Sargent's ..... 40@40&10%

Lanterns— Tubular—

Regular Tubular ..... doz. $4.50@5.60
Side Lift Tubular ..... doz. $4.75@5.25
Square Lift Tubular ..... doz. $4.75@5.25
Other Styles ..... 50&10@50&10&10&5%

Bull's Eye Police—

No. 1, 2¾ inch $3.60
No. 2, 3 inch $4.00

Latches, Thumb—

Roggin's Latches ..... doz. 32@33c

Lawn Mowers—

See *Mowers, Lawn.*

Leaders, Cattle—

Small ..... doz. 50c; *large*, 55c
Covert Mfg. Co. ..... 45&2%

Lemon Squeezers—

See *Squeezers, Lemon.*

Lifters, Transom—

Solid Grip, Payson Mfg. Co. 80%
R. & E. 45%

Lines—

Wire Clothes, Nos.	*18*	*19*	*20*
100 feet	*$2.20*	*2.00*	*1.65*
75 feet	*$1.80*	*1.70*	*1.30*

Cassawan Mills.
Crown Solid Braided Chalk 33⅓%
Mason's, No. 0 to No. 5 ..... 33⅓%
Samson Cordage Works:
Solid Braided Chalk, No. 0 to 8 ..... 40%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₩ gr. 30%

Locks—

Cabinet—

Cabinet Locks ..... 33⅓@33⅓&67⅓%

Door Locks, Latches, &c.—

[Net prices are very often made on these goods.]

Reading Hardware Co. 40%
R. & E. Mfg. Co. 50%
Sargent & Co. ..... 40@40&10%
Snow's Victor ..... 50&10%

Elevator—

Stowell's 33⅓%

Padlocks—

Wrought Iron ..... 75&10@80%
R. & E. Mfg. Co. Wrt. Steel and Brass. 50%

Sash, &c.—

Fitch's Bronze and Brass 66⅔%
Fitch's Iron 70%
Ives' Patent ..... 55&5@65%
Payson's Signal 80%
Reading ..... 60&10&10@70%

Machines—

Boring—

	Without Augers. Upright.	Angular.
Improved No. 3	$4.25	No. 1 $5.00
Improved No. 4	3.75	No. 2 3.38
Improved No. 5	2.75	
Jennings'	2.50	3.00
Millers' Falls		5.75
Snell's, Rice's Pat.	2.50	2.75
Swan's, No. 500	5.10	No. 900 6.45

Hoisting—

Moore's Anti-Friction Differential Pulley Block 30%
Moore's Hand Hoist, with Lock Brake. 20%

Ice Cutting—

Chandler's 15%

Washing—

Wayne American, ₩ doz.	$28.00	Carload lots 10% off, freight allowed.
Western Star, No. 2, ₩ doz.	28.00	
Western Star, No. 3, ₩ doz.	30.00	
St. Louis, No. 41, ₩ doz.	60.00	

Mallets—

Hickory ..... 45&5@50&5%
Lignumvitæ ..... 45&5@50&5%
Tinners', Hickory and Applewood, doz. ..... 50@55c

Mats—

Door—

Elastic Steel (W. G. Co.) 10%

Mattocks—

See *Picks and Mattocks.*

Meat Cutters—

See *Cutters, Meat.*

Milk Cans—See *Cans, Milk*

Mills— Coffee—

Enterprise Mfg. Co. ..... 25@30%
National, list Jan. 1, '94 ..... 30%
Parker's Columbia and Victor ..... 50&10@60%
Parker's Box and Side ..... 50&10@60%
Swift, Lane Bros. 30%

Mincing Knives—

See *Knives, Mincing.*

Molasses Gates—

See *Gates, Molasses.*

Money Drawers—

See *Drawers, Money.*

Mowers, Lawn—

Net prices are generally quoted.

Cheap ..... *all sizes, $1.80@2.10*
Good ..... *all sizes, $2.50@2.75*

10	*12*	*14*	*16-inch*
High Grade 4.25	*4.50*	*4.75*	*5.00*

Pennsylvania and Continental. 60&10&5%
Quaker City ..... 70&5%
Great American ..... 70&5%
Philadelphia:
Styles M., S., C., K., T. ..... 70&5%
Style A, all Steel ..... 60&10%
Style E, Low Wheel ..... 60&10%
Style E, High Wheel ..... 70&10&5%
Drexel and Gold Coin, low list ... 50&5%

Nails—

Cut and Wire. See Trade Report.
Wire Nails and Brads, Papered.
List July 20, 1899..85&10@85&10&5%
Hungarian, Finishing, Upholsterers', &c. See Tacks

Horse—

Nos.	6	7	8	9	10	
A. C.	25¢	23¢	22¢	21¢	21¢	40&5%
Ausable	28¢	26¢	25¢	24¢	23¢	50&10%
Capewell	19¢	18¢	17¢	16¢	16¢	10&5%
C. B. K.	25¢	25¢	23¢	21¢	21¢	40%
Champ'n	28¢	26¢	25¢	24¢	23¢	40&5&2%
Clinto	19¢	17¢	16¢	15¢	14¢	30&10&5%
Maud S.	25¢	23¢	22¢	21¢	21¢	50%
Neponset	23¢	21¢	20¢	19¢	18¢	40%
Putnam	23¢	21¢	20¢	19¢	18¢	33⅓%
Vulcan	23¢	21¢	20¢	19¢	18¢	25&10%
American, Nos. 5 to 16 ₩ ℔						9@9½¢

Picture

	1½	*2*	*2½*	*3*	*3½ in.*
Brass Head	*.45*	*.60*	*.70*	*.95*	*1.00 gro.*
Por. Head	*..*	*1.10*	*1.10*	*1.10*	*.. gro.*

Nippers, See *Pliers and Nippers.*

Nut Crackers—

See *Crackers, Nut.*

Nuts—

List Feb. 1, '99.

Cold Punched	*Off*
Mfrs. or U. S. Standard, list.	
Hexagon, plain	*5.80@5.90c*
Square, plain	*5.40@5.50c*
Square, C. T. & R.	*5.60@5.70c*
Hexagon, C. T. & R.	*6.40@6.50c*
Hot Pressed:	
Mfrs., U. S. or Nar. Gauge Stan'd.	
Square Blank or Tapped	*5.80@5.90c*
Hexagon Blank or Tap'd	*6.50@6.60c*

Oakum—

Best or Government ..... *lb. 6¼c*
Navy ..... *lb. 5 c*
U. S. Navy ..... *lb. 5¼c*
Plumbers' Spun Navy *5¼c*
In carload lots ¼c lb. off f.o.b. New York.

Oil, Axle—

Snow Flake: 33⅓&10%
1 pt. cans, per doz. $3.00
1 qt. cans, per doz. $4.80
1 gal. cans, per doz. $15 00
5 gal. cans, per doz. $66.00

Oil Tanks—See *Tanks, Oil.*

Oilers—

Brass and Copper ..... *40&10@50%*
Tin or Steel ..... *60&10@65%*
Zinc ..... *60&10@65%*
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4; No. 3, $4.40 ₩ doz. 30%
Malleable, Hammers' Old Pattern, same list ..... 50&10%
Wilmot & Hobbs Mfg. Co.:
Spring Bottom Cans ..... 70&70&10%
Railroad Oilers etc. ..... 60@60&10%

Oponers—

Can—

French ..... *doz. 35c*
Iron Handle ..... *doz. 25@27c*
Sprague, Iron Hdle., per doz. 35@40c
Sardine Scissors ... doz. $1.75@$3.00
Tip Top ..... per doz. $1.75
National, ₩ gro. ..... $1.75@$2.00
Stowell's ..... per doz. 40@45c
Waldorf, ₩ gro. $9.00

Egg—

Nickel Plate ..... per doz., $2.00
Silver Plate ..... per doz., $4.00

Packing—

Rubber—

Standard, fair quality ..... 70&10@75%
Inferior quality ..... 75&10@80%
Extra ..... 60&5@60&10&5%
Jenkins' Standard, ₩ ℔ 80c... 35@25&5%

Miscellaneous—

American Packing ..... *9@10c lb.*
Cotton Packing ..... *13@14c lb.*
Italian Packing ..... *10½@11¼c lb.*
Jute ..... *3½@5c lb.*
Russia Packing ..... *12@13c lb.*

Pails—

Creamery—

S. S. & Co., with gauges.. No 1 $6.50; No. 2, $6.75 ₩ doz.

Galvanized—

Price per gro.

Inch	*10*	*12*	*14*
Water, Regular	*18.00*	*21.00*	*24.00*
Water, Heavy	*22.00*	*25.50*	*28.00*
Fire, Rd. Bottom	*31.00*	*38.00*	*55.00*
Well	*27.00*	*32.00*	*51.00*

Pans—

Dripping—

Standard List ..... *65&10@65%*

Fry—

Common Lipped:

No.	*1*	*2*	*3*	*4*	*5*
Per doz.	*$0.80*	*.75*	*.85*	*.95*	*1.15*

Roasting and Baking—

Regal, S. S. & Co., ₩ doz., Nos. 5, $4.50; 10 $5.00; 20 $5.50; 30, $6.00
Simplex, ₩ gro., No. 40 $30.00; 50, $34.50; 60 $39 00; 140, $33.00; 150, $37.50; 160, $48.00.

Paper—

Building Paper—

	Per roll
Rosin Sized Sheathing: Light wt., 20 sq. ft. to lb.	*500 sq. ft. $0.40@0.45*
Medium wt., 12 sq. ft. to lb.	*$0.60@0.65*
Heavy wt., extra quality.	*$0.95@1.05*
Medium Grades Water Proof Sheathing	*$0.80@1.25*
Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton	*$40.00*
York Haven Waterproof Sheathing	$1 35@1.75

Tarred Paper.

1 ply (roll 400 sq. ft.), ton *$28 00*
2 ply, roll 100 sq. ft. ..... *50@55c*
3 ply, roll 100 sq. ft. ..... *75@80c*

Sand and Emery—

List Dec. 23, 1899..50&10@50&10&10%

Parers—

Apple—

Advance ₩ doz.	$4.50
Baldwin ₩ doz.	$5.00
Bonanza each	$5.00
Dandy each	$7.50
Eureka, 1898 each	$16.00
Family Bay State ₩ doz.	$12.00
Hudson's Little Star ₩ doz.	$4.00
Hudson's Rocking Table ₩ doz	$5.50
Improved Bay State ₩ doz.	$27.00@30.00
New Lightning ₩ doz.	$5.50
Reading 79 ₩ doz.	$4.00
Reading 78 ₩ doz.	$7.00
Turn Table '98 ₩ doz.	$5.50
White Mountain ₩ doz.	$4.00

Potato—

Saratoga ₩ doz.	$5.50
White Mountain ₩ doz.	$4.50

Paris Green— *per lb.*

In Arsenic, kegs or casks *12½c*
In kegs, 100 to 175 lbs. ..... *13 c*
In kits, 14, 23, 56 lbs. ..... *14 c*
In paper boxes, 2 to 5 lbs. ..... *14 c*
In paper boxes, 1 lb. *14½c*
In paper boxes, ½ lb. *15½c*
In paper boxes, ¼ lb. *16½c*

Picks and Mattocks—

List Feb. 23, 1899 ..... *75@75&10%*

Pinking Irons—

See *Irons, Pinking.*

Pins—

Escutcheon—

Brass ..... *60&10%*
Iron, list Nov. 11, '95 ..... *60&10%*

Pipe, Cast Iron Soil—

Factory Shipments—Carload lots.

Standard, 2-6 in ..... *65&5@65&10%*
Extra Heavy, 2-6 in ..... *70&10@75%*
Fittings ..... *75&10&5@80%*

NOTE.—*Freight allowed on Carload lots.*

Pipe, Merchant, Boiler Tubes, &c.—

Carloads to Consumers.
Merchant Pipe.

	Black.	*Galvanized.*
⅛ to ¼ inch	*61%*	*48%*
¾ to 10 inch	*63½%*	*56%*

Boiler Tubes

Steel.	*Up to 22 feet*	*22 feet and over.*
1 to 1½ inch and 2½ in.	*49½%*	*44½%*
1¾ to 2¼ inch	*55%*	*50½%*
2¾ to 13 inch	*57%*	*52½%*
Iron.		
1 to 1½ inch and 2½ in.	*49½%*	*44½%*
1¾ to 2¼ inch	*55%*	*50½%*
2¾ to 13 inch	*57%*	*52½%*

Casing, Cut Lengths. *S. & S.*

2 to 8 inch	*58%*
2½ to 4 inch	*63%*
4½ to 12½ inch	*65%*

NOTE.—*The old list is still used by some jobbers, and net prices are often quoted.*

Planes and Plane Irons—

Wood Planes—

Molding ..... *40@2¼@40&10%*
Bench, First quality ..... *45&10@45&10&5%*
Bench, Second quality ..... *50&10@50&10&5%*
Bailey's (Stanley R. & L. Co) ..... 50&10@50&10&10%
Gage Self Setting 35%

Iron Planes—

Bailey's (Stanley R. & L. Co) ..... 50&10@50&10&10%
Chaplin's Iron Planes ..... 50&10%
Miscellaneous Planes (Stanley R. & L. Co.) ..... 25&10@25&10&10%
Sargent's ..... 50&10&10%

Plane Irons—

Wood Bench Plane Irons ..... *30&5@30&10&5%*
Buck Bros. 30%
Butcher's ..... $5.00@5.25 to $
Stanley R. & L. Co... 50&10@50&10&10%
L. & L. J. White ..... 20&5@25%

Planters, Corn, Hand.

Kohler's Eclipse ..... ₩ doz. $9.00

Plates—

Felloe ..... *lb. 3½@4c*
Self-Sealing Pie Plates (S. S. & Co.), ₩ doz. $2.00 ..... 50%

Pliers and Nippers—

Button Pliers ..... *70&10@75%*
Gas Burner, per doz., 5 in., $1.15@ $1.20; 6 in., $1.35@$1.45.

Gas Pipe..	*7*	*8*	*10*	*12-in.*
	$1.75	*$2.00*	*$2.75*	*$3.75*

Acme Nippers ..... 40@40&5%
Bernard's:
Parallel Pliers, &c. 35%
Paragon Pliers ..... 50&5%
Lodi Pliers ..... 50&5%
Elm City Fence Pliers 35%
Cronk Hanger Co.:
Cronk's 60%
Improved Button ..... 70&5%
Stub's 50%
Combination and others 25%
Heller's Farriers' Nippers, Pincers, and Tools 50@50&5%
Morrill's Parallel, ₩ doz. $12.00... 30&5%
P., S. & W. Cast Steel ..... 30&10@40%
P., S. & W. Tinners' Cutting Nippers, 40@40&5%
Swedish Side, End and Diagonal Cutting Pliers 50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds 40%

Plumbs and Levels—

Plumbs and Levels ..... *70&10@75&5%*
Davis Iron, Machinist Nos. 1 to 14 ..... 20%
Davis Iron, Adjustable Nos. 6 to 49 ..... 35%
Disston's 70%
Pocket Levels ..... 75&10&10@75&10%
Stanley R. & L. Co.:
70&10&70&10&10%
Stanley's Duplex ..... 25&10@25&10&10%
Woods' Extension 33⅓%

Poachers, Egg—

Buffalo Steam Egg Poachers, ₩ doz., No. 1, $7.20; No. 2, $11.00 No. 3, $11.00; No. 4, $14.50 ..... 50%

Points, Glaziers'—

Bulk and 1 lb. papers.. lb. 8½@ 9 c
¼-lb. papers ..... *lb. 8½@ 9½c*
¼-lb. papers ..... *lb. 9 @ 9½c*

Pokes, Animal—

Ft. Madison Hawkeye ..... ₩ doz. $3.25
Ft. Madison, Western ..... ₩ doz. $3.75

Police Goods—

Manufacturers' Lists ..... *25@25&5%*
Tower's 25%

Polish—Metal—

Prestoline Liquid, No. 1 (¼ pt.), ₩ doz. $3.00; No. 2 (1 qt.), $9.75 ..... 40%
Prestoline Paste ..... 33⅓@40%
U. S. Metal Polish Paste, 3 oz. boxes, ₩ doz. 50¢; ₩ gr. $4.50; ½ ℔ boxes, ₩ doz. $1.25; 1 ℔ boxes, ₩ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₩ doz. $1.25; ₩ gr. $12.00.
Barkeepers' Friend Metal Polish, ₩ doz. $1.75; ₩ gr. $18.00.
Wynn's White Silk, ½ pt. cans, ₩ doz. $1.50

Stove—

Black Eagle Benzine Paste, 5 ℔ cans ... ₩ ℔ 10¢
Black Eagle, Liquid, ½ pt. cans. ₩ doz. 75¢
Black Jack Paste, ¾ ℔ cans, ₩ gro. $9.00
Ladd's Black Beauty, gr. $10.00 ..... 50%
Joseph Dixon's, ₩ gr. $5.75 ..... 10%
Dixon's Plumbago ..... ₩ ℔ 8¢
Fireside ..... ₩ gr. $2.50
Gem, ₩ gr. $4.50 ..... 10%
Japanese ..... ₩ gr. $3.75
Jet Black ..... ₩ gr. $3.50
Peerless Iron Enamel, ½ pt. cans. ₩ doz. $1.50
Wynn's Black Silk, 5 ℔ pail ... each 70¢
Wynn's Black Silk, ½ ℔ box, ₩ doz. $1.00
Wynn's Black Silk, 5 oz. box, ₩ doz. $0.75
Wynn's Black Silk, ½ pt. liq., ₩ doz. $2.00

Poppers, Corn—

Round or Square:

1 qt.	*gro. $7.00@$7.50*
1½ qt.	*gro. 9 50@ 10.00*
2 qt.	*gro. 10.50@ 11.00*

Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

Potato Parers—

See *Parers, Potato.*

Pots—

Glue—

Enameled ..... *40&10@50%*
Tinned ..... *40@45%*

Powder—

In Canisters:

Duck, 1 lb. each	*45c*
Fine Sporting, 1 lb. each	*75c*
Rifle, ½-lb. each	*15c*
Rifle, 1-lb. each	*25c*
In Kegs:	
Duck, 6½-lb. kegs	*$2.25*
Duck, 12½-lb. kegs	*$4.25*
Duck, 25-lb kegs	*$8.00*
Rifle, 6½-lb. kegs	*$2.25*
Rifle, 12½-lbkegs	*$2.25*
Rifle, 25-lb. kegs	*$4.00*

King's Smokeless shot Gun and Rifle:
Keg (25 ℔ bulk) $22 00
Half Keg (12½ ℔ bulk) $11.25
Quarter Keg (6¼ ℔ bulk) $5.75
Canister (1 ℔ bulk) $1.00
King's Semi-Smokeless:
Keg (25 ℔ bulk) $16.00
Half Keg (12½ ℔ bulk) $8.25
Quarter Keg (6¼ ℔ bulk) $2.75
One Pound Can, bulk $0.50

Presses—

Fruit and Jelly—

Enterprise Mfg. Co. ..... 20@25%

Pruning Hooks and Shears—See *Shears.*

Pullers, Nail—

Crown, ₩ doz. $18.00 ..... 50%
Crown Prince, ₩ doz. $15.00 ..... 50%
Cyclops ..... 40@40&10%
Diamond B, No. 2, doz. $22.; No. 3, $11. ..... 40%
Eureka, 5 ℔, doz., $16.00; 3 ℔ $15 ..... 40%
Giant, No. 1, ₩ doz. $18; No. 2, $15.50; No. 3, $15. ..... 40%
Miller's Falls, No. 3, per doz. $12.00. ..... 40%
Pelican ₩ doz. $9.00 ..... 15&10%
Scranton, No. 1 and 2, ₩ doz. ..... 40&10%
Scranton, No. 3, ₩ doz. $9.00 $8.50

Pulleys—

Hay Fork, Swivel or Solid Eye..... doz. $1.25@1.50

Hay Fork, Stowell's Anti-Friction, 5-in. Wheel, ₩ doz. $12.00..... 40%
Hot House, Awning, &c..... 60@60&10%
Japanned Clothes Line..... 60@60&10%
Japanned Screw..... 70&10&10%
Japanned Side..... 70&10&10%
Stowell's Ceiling or End, Anti-Friction 60%
Stowell's Dumb Waiter, Anti-Friction .. 60&10%
Stowell's Electric Light..... 60%
Stowell's Side, Anti-Friction..... 60&10%

Sash Pulleys—

Acme..... 1¾ in., 16¢; 2 in., 19¢
Common Sense, 1¾ in.... ₩ doz., 18¢; 2 in., 20¢.
Fox-All-Steel, Nos. 8 and 7, 2¼ in..... ₩ doz. 25¢
No. 9, 1¾ in..... ₩ doz. 20¢
Extra for Plated Finish.... ₩ doz. 20¢
Extra for Anti-Friction Bronze Bushing..... ₩ doz 10¢
Grand Rapids All Steel Noiseless.... 40%
Ideal No. 13..... 1¾ in., ₩ doz., 20¢
Niagara..... 1¾ in., 16¢; 2 in., 19¢
No. 36, Troy.... 1¾ in., 14½¢; 2 in., 16½¢
Star..... 1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See *Blocks.*

Pumps—

Cistern..... 60@60&10%
Pitcher Spout..... 75&5@75&10%
Pump Leathers, all sizes.... gro. $6.00
Barnes Dbl. Acting (low list).. 55%
Flint & Walling's Fast Mail... 55@55&10%
Flint & Walling's Pitcher Spout.... 75&5%
Loud's Suction Pumps, U. S. Co..... 20%
Myer's Pumps, low list 50%
Contractors' Rubber Diaphragm Non-chokable, B. & L. Block Co..... 20%

Punches—

Revolving (4 tubes)... doz. $3.75@4.00
Saddlers' or Drive, good.. doz. 65@70c
Spring, good quality..... $1.65@1 75
Bemis & Call Co.'s Cast Steel Drive.... 50%
Bemis & Call Co.'s Check..... 55%
Bemis & Call Co.'s Spring..... 50%
Niagara Hollow Punches..... 45%
Niagara Solid Punches..... 55%
Steel Screw, B & K. Mfg. Co..... 40%
Tinners' Hollow, P., S. & W. Co..... 35@35&5%
Tinners' Solid, P., S. & W.Co., ₩ doz., $1.44..... 55%

Rail— Barn Door, &c.—

Barn Door, Light..In.	½	⅝	¾
100 feet.....	*$2.00*	*$2.50*	*$3.00*

B. D., for N. E. Hangers:

	Small.	Med.	Large.
100 feet.....	*$2 20*	*2.70*	*3.20*

Sliding Door, Bronzed Wr't Iron, ft. 6¼c
Sliding Door, Iron Painted....2½@3c
Sliding Door, Wrought Brass, 1¼ in..... lb. 30c..30%
Cronk's Double Braced Steel Rail, ₩ foot..... 3¼¢
Cronk's O. N. T. Rail..... 3¼¢
Lanes' O. N. T., ₩ 100 ft., 1 inch.... $2.65
Lanes' Standard, ₩ 100 ft..... 3.75
Lawrence Bros.' ₩ ft. 4¼¢
McKinney's None Better..... ₩ ft. 3¢
McKinney's Standard..... ₩ ft. 3¼¢
Moore's Wr't. Bracket, Steel..... 3¼¢
Stowell's Steel Rail, Plain..... 3¼¢

Rakes—

Net Prices, Malleable Rakes:

	10	12	14	16-tooth
Shank.....	*$1.50*	*1.60*	*1.75*	*1.85*
Socket.....	*$1.65*	*1.80*	*1.95*	*2.10*

Sept. 1, 1900, List:
Cast Steel..... 70@5&2%
Malleable..... 70@10@75@5%
Lawn Rakes, Metal Head, per doz., 20 teeth, $3.60; 24 teeth, $3 75.
Fort Madison Red Head Lawn.... $3 25
Fort Madison Blue Head Lawn..... $3.00
Jackson Lawn, 29 and 30 teeth..... ₩ doz. $4.50
Kohler's Lawn Queen, 24-tooth, ₩ doz. $3.75
Kohler's Paragon, 24-tooth, ₩ doz. $3.00
Kohler's Steel Garden, 14-tooth, ₩ doz. $3.50
Kohler's Malleable Garden, 14-tooth, ₩ doz..... $2.50

Rasps, Horse—

Disston's..... 75%
Heller Bros..... 60&10&10%
McCaffrey File Co. Horse Rasps..... 60@60&5%
New Nicholson Horse Rasp..... 70&10%
See also *Files.*

Razors—

Fox Razors, No. 42... ₩ doz. $20.00
Fox Razors, No 44... ₩ doz $24.00
Fox Razors, No. 82, Platina, ₩ doz $24.00
} 40%
Sterling Razor Works..... 50%

Razor Strops—

See *Strops, Razor.*

Reels— Fishing—

Hendryx Aluminum, German Silver, Gold, Bronze, Silver, Rubber, Populo and Salmon, Single Action, Multiplying and Quadruple, all sizes..... 25%
Hendryx Single Action Series, 102P and PN, 202P and PN, 102 PR and PRN, 302 PR and PRN, 304 P and PN, 00304P and PN, 502 and 502N, 802 and 802N, 02084N, Competitor.50%
Hendryx Multiplying and Quadruple Series, 3004N and PN, 4N and PN, 2904N, 2904P and PN, 002904PN, 0924 and 0924N, 5009N and PN..... 40&10%
Shakespeare, Style C..... 25%

Registers—

Black Jap..... 50¢10@60%
White Jap..... 40¢10%
Bronzed..... 40%
Nickel Plated..... 30¢10%
Electro Plated..... 40%

Riddles, Grain or Sand—

16 in. per doz..... $2.00@$2.25
17 in. per doz..... $2.25@$2.50
in. per doz..... $2.50@$2.75

Rings and Ringers—

Bull Rings—

	⅞	1	1¼	3 Inch.
Steel.....	$0.80	0.90	1.00	0.25 doz.
Copper.....	1.10	1.50		1.50 doz.

Hog Rings and Ringers—

Hill's Rings....gro. boxes, $4.50@4.75
Hill's Ringers, Gray Iron.doz. 55@60c
Hill's Ringers, Mal. Iron, per doz 75@80c
Blair's Rings.....per gro. $5.75@6.00
Blair's Ringers...per doz. $0.90@1.00
Brown's Rings....per gro. $6.00@6.25
Brown's Ringers..per doz. $1.00@1.10
Rapid Rings..... ₩ gro. $6.00
Rapid Ringers..... ₩ doz. $3.50

Rivets and Burrs—

Copper..... 50@50c&5%
Iron or Steel:
Tinners'..... 70¢10@75%
Miscellaneous..... 70¢10@75%

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rollers—

Acme, Stowell's Anti-Friction..... 50%
Barn Door, Sargent's list..... 50&10&10%
Cronk's Stay..... 66⅔%
Cronk's Brinkerhoff..... 66⅔
Lane's, Stay..... 33⅓%
Stowell's Barn Door Stay... ₩ doz. $1.25

Rope—

Manila, 7-16 in. and larger. lb. 10¼@10¼c
Manila.....¾-inch. lb. 10¼@11 c
Manila..¼ and 5-16 in. lb. 11¼@11½c
Manila, Tarred Rope, 15 thread..... lb 10¼@10¼c
Manila Hay Rope Med'm. lb 10¼@10¼c
Sisal, 7-16 in. and larger. lb. 7¼@ 7½c
Sisal.....¾-inch. lb. 7¾@ 8 c
Sisal.....¼ and 5-16 in. lb. 8¼@ 8½c
Sisal, Hay Rope, 2 to 10 ply..... lb. 7½@ 7¾c
Sisal, Tarred, Medium Lath Yarn..... lb. 6¾@ 7 c
Cotton Rope: Best, ¼-in. and larger..lb... @14 c
Med'm, ¼-in. and larger lb... @11½c
Com., ¼-in. and larger.lb... @ 9 c
Jute Rope, No. 1, ¼ in. and up..... lb... @ 6½c
Jute Rope, No. 2, ¼ in and up..... lb .. @ 6 c

Wire Rope—

Galvanized..... 25&10@2%
Plain..... 30@10@2%

Ropes, Hammock—

Covert Mfg. Co..... 45&2%
Covert Saddlery Works..... 60%

Rules—

Boxwood..75@10@10@10@10@75@10@10@10@10&5%
Ivory ...40@10@10@10@10@10@10@10%
Lufkin's Steel..... 50&10%
Lufkin's Lumber..... 50&10%
Stanley R. & L. Co.:
Boxwood...75&10&10@75&10&10&10%
Ivory..... 35&10@35&10&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—

See *Paper and Cloth.*

Sash Cords—See *Cord, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—

See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*

Saw Frames—

See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Atkins' Circular..... 50@50&10%
Atkins' Band..... 50&10@60%
Atkins' Cross Cuts..... 35&5%
Atkins' Mulay, Mill and Drag..... 50&10%
Atkins' One-Man Saw..... 40%
Atkins' Wood Saws..... 40%
Atkins' Hand, Compass, &c..... 40%
Disston's Circular Solid and Inserted Tooth..... 50%
Disston Band 2 to 14 in. wide..... 60%
Disston Band ¼ to 1¾..... 70%
Disston Crosscuts..... 45@45&10%
Disston Narrow Crosscuts..... 50@50&10%
Disston Mulay, Mill and Drag..... 50%
Disston Framed Woodsaws..35@35&7½%
Disston Woodsaw Blades....40@40&7½%
Disston Woodsaw Rods..... 25%
Disston Handsaws, Nos. 12, 99, 9, 10, d100, D8, 120, 79, 77, 8..... 35@35&7½%
Disston Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination... 30@30&7½%
Disston Compass, Keyhole, &c 35@35&7½%
Disston Butcher Saws and Blades..... 35@35&7½%

C. E. Jennings & Co.'s.:
Back Saws..... 25%
Butcher Saws..... 35%
Compass and Key Hole Saws..... 25%
Framed Wood Saws..... 40%
Hand Saws..... 25@30%
Wood Saw Blades..... 45%
Peace Circular and Mill..... 50%
Peace Cross Cuts, list Jan. 1, '99..... 50%
Peace Hand, Panel and Rip..... 30%
Richardson's Circular and Mill..... 50%
Richardson's X Cuts, list Jan. 1, '99..50%
Richardson's Hand, &c..... 30%
Simonds' Circular Saws..... 50%
Simonds' Crescent Ground Cross Cut Saws..... 35%
Simonds' One-Man Cross Cuts.... 40&10%
Simonds' Gang Mill, Mulay and Drag Saws..... 45@45&5%

Hack Saws—

Disston Concave Blades..... 35%
Disston Keystone..... 30%
Disston Hack Saw Frames..... 30%
C. E. Jennings & Co's.:
Hack Saw Frames, Nos. 175, 180, 330..... 40%
Hack Saws, Nos. 175, 180, 330, complete..... 40%
Griffin's Hack Saw Frames..... 45%
Griffin's Hack Saw Blades..... 45%
Star Hack Saws and Blades..... 15&10%

Scroll—

Barnes' No. 7, $15..... 25%
Barnes' Scroll Saw Blades..... 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18: with boring attachment, $20..... 20%
Lester, complete, $10.00..... 15&10%
Rogers, complete, $4.00..... 15&10%

Scale Beams—

See *Beams, Scale.*

Scales—

Family, Turnbull's.... ...30@30&10%
Hatch, Counter:
Platform, 4 lb. by ½ oz... doz. $5.75
Two Platforms, 8 lb. by ½ oz..... doz. $16.00
Union Platform, Plain....$1.75@2.00
Union Platform, Striped..$1.85@2.15
Chatillon's Eureka..... 25%
Chatillon's Favorite..... 40%
Chatillon's Grocers' Trip Scales..... 50%
Pelouze Scales—Household, Counter, Confectionery, Postal, Ice, &c..... 50%
"The Standard" Portables..... 45%
"The Standard" R. R. and Wagon.... 50%

Scrapers—

Box, 1 Handle .....doz $2.25@2.75
Box, 2 Handle..... doz. $3.75@4.00
Ship, No. 1, doz. $3.50; No 2, $2.25@2.40
Adjustable Box Scraper (S. R. & L. Co.) $8.00..... 30&10%

Screens, Window and Frames—

Bonanza Window Screens.....60@60&5%
Flyer Pattern Window Screen.60@60&5%
Maine Window Screen Frames.40&10&5%
Perfection Window Screens.....60@60&5%
Phillips' Window Screen Frames..... 60&10&5%
Porter's Extension Window Screens.. 50&10%
Wabash Spring Adj. Screen..... 50%

Screw Drivers—

See *Drivers, Screw.*

Screws—

Bench and Hand—

Bench, Iron..doz. 1 in., $3.00@3.25; 1¼, $3.50@3.75; 1¼, $4.00@4.50
Bench, Wood, Beech..doz. $3.50@2.75
Hand, Wood..... 30@10@40%
Hand, R. Bliss Mfg Co..... 35%

Coach, Lag and Hand Rail—

Lag, Common Point, list Oct. 1, '99..... 80@...%
Coach and Lag, Gimlet Point, list Oct. 1, '99..... 75@15@...%
Hand Rail, list Jan. 1, '81.60@10@...%

Jack Screws—

Millers Falls..... 50&10&10%
Millers Falls, Roller..... 50&10%
P., S. & W..... 40&5@40&10%
Sargent..... 70&10%

Machine—

List Jan. 1, '98.
Flat or Round Head, Iron.50@10@60%
Flat or Round Head, Brass..... 50@10@60%

Set and Cap—

Set (Iron or Steel) .....70@10%
Sq. Hd. Cap..... 65@10%
Hex. Hd. Cap..... 65@10%

Wood—

List Jan. 1, 1900.
Manufacturers' printed discounts:
Flat Head, Iron..... 87½@90%
Round Head, Iron..... 85@87½%
Flat Head, Brass..... 85@87½%
Round Head, Brass..... 82½@85%
Flat Head, Bronze..... 75@80%
Round Head, Bronze..... 72½@77½%
Drive Screws..... 87½@90%

Scroll Saws—See *Saws, Scroll.*

Scythes—

Grass Scythes:
Natural Finish..per doz. $7.50@7 75
Pol. Blade.....per doz. $8.00@8.15
Painted or Bronzed..per doz. $8.00
Weed and Bush..per doz. $7.25@7.50

Scythe Snaths—

See *Snaths, Scythe.*

Seeders—

Raisin—

Enterprise..... 25@30%

Sets—

Awl and Tool—

Brad Awl and Tool Sets:
Wood Hdle., 10 Awls doz. $2.00@2.25
Wood Hdle., 14 Awls, 6 Tools.... doz. $2.50@2.60
Aiken's Sets, Awl and Tools: No. 20, ₩ doz. $10.00..... 50&10&10%
Fray's Adj. Tool H dls...Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7..... 50%
Millers Falls Adj. Tool Hdls, No. 1, $12; No. 4, $12; No. 5, $18 .... 15&10%
Stanley a Excelsior: No. 1, $7.50; No. 2 $4.00; No. 3, $5.50..... 30&10@30&10&10%

Garden Tool Sets—

Ft. Madison Rakes, Shovel and Hoe.... ₩ doz..... $9.00

Nail—

Square..... per gro. $3 50
Round, Blk. and Pol., assorted..... gro. $1.80@2.50
Octagon..... gro. $4.25@4.75
Knurled. Good..... gro. $6.00@6.50
Buck Brothers..... 27½%
Cannon a Diamond Point, ₩ gr. $12..25%
Snell's Corrugated, Cup Pt..... 50%
Snell's Knurled, Cup Pt..... 66⅔%

Rivet—

Regular list..... 70@70¢10¢5%

Saw—

Aiken's Genuine..... ₩ doz. $5.50@6.00
Aiken's Imitation .. ..₩ doz. $3.00@3.10
Atkin's Criterion..... 40%
Atkin's Adjustable..... 40%
Bemis & Call Co.'s Cross Cut..... 30%
Bemis & Call Co.'s Plate..... 20%
Bemis & Call Spring Hammer..... 30%
Disston's Star and Monarch..... 25%
Hammer, Bemis & Call Co.'s new Pat. 45%
Morrill's No. 1, $15.00..... 40&20%
Nos. 3 and 4, Cross Cut, $23.00. 40&20%
No. 5, Mill, $31.00..... 40&20%
No. 10, $15.50..... 40&20%
No. 11, $16.00..... 40&20%
Taintor Positive, ₩ doz. $18..... 60%

Sharpeners Knife—

Chicago Wheel & Mfg. Co..... 60@65%
Smith & Hemenway Co..... 70&5%
Tanite Mills ₩ gross, $14.40.... 35@33⅓%

Sharpeners, Skate—

Eureka Skate Sharpener..... ₩ doz. $2.00

Shaves Spoke—

Iron..... doz. $1 00@1.20
Wood..... doz. $1.75@2.25
Bailey's (Stanley R. & L. Co)..... 50&10%
Goodell's, ₩ doz. $9.00..... 15&10%

Shears—

Cast Iron...	*7*	*8*	*9 in.*
Best.....	*$16.00*	*18.00*	*20.00 gro.*
Good.....	*$13.00*	*15.00*	*17 00 gro.*
Cheap.....	*$5.00*	*6.00*	*7.00 gro.*

Straight Trimmers, &c.:
Best quality, Jap..... 70@70¢10%
" Nickel..... 60@60¢10%
Fair qual. Jap..... 80@80¢5%
" Nickel..... 75@75¢10%
Tailors' Shears..... 40@40¢10%
Acme Cast Shears..... 40@40&5%
Heinisch's Tailors' Shears..... 40@40&5%
Wilkinson's Hedge..... 50%
Wilkinson's Sheep..... 1900 list. 50%

Tinners' Snips—

Forged Handles, Steel Blades..20¢10%
Malleable Handles, Laid with Steel. 40%
Forged Handles, Steel Blades, Berlin.. 40&10%
Jennings & Griffin Mfg. Co's. 7 to 10 inch..... 50%
Niagara Snips..... 40%

Pruning Shears and Tools—

Cronk's Pruning Shears..... 33⅓%
Disston's Combined Pruning Hook and Saw, ₩ doz. $18.00..... 25@25&10%
Disston's Pruning Hook, ₩ doz. $12.00 25@25&10%
John T. Henry Mfg. Company:
Pruning Shears, all grades..... 50&5%
Orange Shears..... 50&30%
Grape..... 50&10%
Tree Pruners..... 75%
Nagley's Pruning Shears..... 10&5%
P., S. & W. Co..... 33⅓@33⅓&10%

Sheaves—Sliding Door—

Stowell's Anti-Friction..... 50%
Patent Roller Hatfield's, Sargent's list, 80&10@80&10&7½
Reading..... 70&10@75%
R. & E. list..... 33⅓%
Wrightsville, Hatfield Pattern..... 80%

Sliding Shutter—

Reading list..... 70&10@75%
R. & E. list..... 33⅓%
Sargent's list..... 50&16⅔&10%

Shells—

Shells, Empty—

Brass Shells, Empty:
First quality, all gauges..... 60&5%
Climax, Club, Rival, 10 and 12 gauge.. 65&5%
Paper Shells, Empty:
Acme, Ideal, Leader, New Rapid, Smokeless, 10, 12, 16 and 20 gauge. 33⅓&10%
Blue Rival, New Climax, Primrose Club, Yellow Rival, 10, 12, 16 and 20 gauge..... 15%
Climax Club, League, Rival, 14, 16 and 20 gauge ($7.50 list)..... 20&5%
Climax Club, League, Rival 10 and 12 gauge..... 25&5%
Defiance, High Base, New Victor, Nitro, Repeater, 10, 12, 16 and 20 gauge..... 15%
Trap and Metal Lined, 10, 12, 16 and 20 gauge..... 33⅓&10&5%

Shells, Loaded—

Loaded with Black Powder..... 40¢5%
Loaded with Nitro Powder..... 40¢10¢5%

Shoes, Horse, Mule, &c.—

F. o. b., Pittsburg.

Iron..... per keg $3.50
Steel..... per keg 3.25
Burden's, all sizes, ₩ keg..... $3 60

Shot—

Drop, up to B, 25-lb. bag.... $1.25@1.35
Drop, B and larger, per 25-lb. bag.. $1.30@1.50
Buck, 25-lb. bag..... $1.30@1.60
Chilled, 25 lb. bag..... $1.30@1.60
Dust Shot, 25 lb. bag..... $1.50@2.10

Shovels and Spades—

No. 2, Polished, Sq. or Rd. Point, D or L Handle:

	A1, 1st Grade.	*B2,* 2d Grade
Plain Back....	*$10 50*	*$9 60*
Strap Back....	*9.90*	*9.00*
Cleveland Pat'n	*10.80*	*9.90*

	C3, 3d Grade.	*D4,* 4th Grade
Plain Back....	*$8.70*	*$8.10*
Strap Back....	*8.10*	*7.50*
Cleveland Pat'n	*8.40*	*7.80*

All other sizes add 30c doz.
Black deduct 30c doz.

Note.—The above are the regular Association prices to small retailers, but are often shaded by jobbers $0.50@1.00, and Common, Plain Back Shovels are generally sold by jobbers at $4.75@7.00.

Shovels and Tongs—

Brass Head.....60&5@60&10%
Iron Head.....60&5@60&10%

Sieves and Sifters—

Hunter's Imitation.gro. $10.00@10.50
Buffalo Metallic Blued, S. S. & Co., ₩ gr.:

14&16	16&18	18&20
$12.90	$13.80	$15.00

Eclipse.....₩ gr. $10.00
Electric Light.....₩ gr. $12.00
Hunter's Genuine.....₩ gr. $12.50
Shaker (Barler's Pat.) Flour Sifters, ₩ doz., $3.00.....40%

Sieves, Tin Rim—

Per dozen.

Inch	14	16	18	20
Black, full size	$0 95	.98	1.00	1.10
Plated, full size	$1.05	1.08	1.10	1.20
Black, scant	....	$0.78	.80	.82

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.
Mesh 18, Nested, doz.....$0.75@0 80
Mesh 20, Nested, doz......85@ .90
Mesh 24, Nested, doz.....1.00@1.05

Sinks—

Cast Iron—

Standard list.....60@60&10%
NOTE.—*There is not entire uniformity in lists used by jobbers.*

Wrought Steel—

Columbus Galv'd and Enameled..60&5%
Columbus, Painted.....45%
L. & G. Mfg. Co., Galvanized.....50%
L. & G. Mfg Co., Enameled.....50%

Skeins, Wagon—

Cast Iron.....70&10@75%
Malleable Iron.....40&10@50%
Steel.....40@40&10%

Slates—

"D" Slates.....40@40&10%
Unexcelled Noiseless Slates.....
60&10&10&10@60&10&10&10%
Wire Bound.....35@40&5%
Double Slates, add $1 case, net.

Slaw Cutters—See *Cutters.*

Slicers, Vegetable—

Sterling $ 2.00.....33⅓%

Snaps, Harness—

German.....40@40&10%
Covert Mfg. Co.:

Derby	35&2%
High Grade	45&2%
Jockey	40&2%
Trojan	45&2%
Yankee	35&2%
Yankee, Roller	30&2%

Covert's Saddlery Works:

Banner	60&10%
Crown	60&10%
Model	60&10%
Triumph	60&10%

W. & E. T. Fitch Co.:

Bristol	40&10%
Empire	50&5%
German	40%
National	50&5%
Perfect	45%
Clipper	50&5%
Champion	40%
Security	40%
Victor	60&5%

Oneida Community:

Solid Steel	65@65&10%
Solid Swivel	65&10@65&10&10%
Sargent's Patent Guarded	66⅔&10%

Snaths—

Scythe.....45&5&2%

Snips, Tinners'—See *Shears.*

Soldering Irons—

See *Irons, Soldering.*

Spoke Trimmers—

See *Trimmers, Spoke.*

Spoons and Forks—

Silver Plated—

Flat Ware.....60&10@60&10&10%

Miscellaneous—

German Silver.....60&10@60&10&10%

Springs—

Door—

Gem (Coil).....20%
Star (Coil).....30%
Torrey's Rod, 30 in....₩ doz. $1.10@1.25
Victor (Coil).....60&10&10%

Carriage, Wagon, &c.

Factory Shipments.

1¼ in and wider	Blk.	Hf. Brt.	Brt.
	4¼	4½	4¾c lb

Cliff's Bolster Springs.....35%
Cliff's Seat Springs.....₩ pair 35¢

Sprinklers, Lawn—

Enterprise.....35@30%
Philadelphia No. 1, ₩ doz. $13; No. 2, $15; No. 3, $24.....30%

Squares—

Nickel plated.... } *List Jan. 5, 1900*
Steel and Iron... } .....70@75%
Rosewood Hdl. Try Square and T-Bevels.....60&10&10@70%
Iron Hdl. Try Squares and T-Bevels.
40&10@40&10&10%
Disston's Try Sq. and T-Bevels.....60&10%
Winterbottom's Try and Miter.....50&10%

Squeezers—

Lemon—

Wood, Common, gro., No. 0, $5.25 @$5.40; No. 1, $6.35@$6.50.
Wood, Porcelain Lined:
Cheap.....*doz. $3.00@3.75*
Good Grade.....*doz. $3.00@3.50*
Tinned Iron.....*doz. $0.75@1.25*
Iron, Porcelain Lined doz. $2.90@3.25
Jennings' Star.....₩ doz. $1.85@1.90
King.....₩ doz. $1.00

Staples—

Barbed Blind.....lb. 7@7¼c
Electricians', Association list.....
80&10&10&10%
Fence Staples, same price as Barbed Wire. See Trade Report.
Poultry Netting, Staples....*per lb.*..
3¼@3½c
Grand Crossing Tack Co.'s list....80&10%

Steels, Butchers'—

Dick's.....40%
Foster Bros'.....30%
C. & A. Hoffmann's.....40%

Steelyards.....25@25&10%

Stocks and Dies—

Blacksmiths'.....40@40&10%
Gardner Die Stocks No. 1.....50%
Gardner Die Stocks, larger sizes.....40%
Green River.....25%
Lightning Screw Plate.....25%
Little Giant.....25%
Reece's New Screw Plates.....25@30%
Curtis Reversible Ratchet Die Stock.25%

Stone—

Scythe Stones—

Chicago Wheel & Mfg. Co:
Gem Corundum, 10 inch, $10.80 per gro., 12 inch, $13.00
Cleveland Stone Co., list Nov., '92..33⅓%
Pike Mfg. Co., list '95-'96.....33⅓%

Oil Stones, &c.

Chicago Wheel & Mfg. Co.:
Corundum Oil, Double Grit.....50%
Corundum Axe Stones, Slips, etc.....55%
Pike Mfg. Co.:
Hindostan No. 1, ₩ D...8¢ } 33⅓&
Sand Stone.....6¢ } 33⅓&10%
Turkey Oil Stone, Extra, 5 to 8 In.....80¢
Turkey Slips.....$1.50
Lily White Washita.....60¢ } 33⅓%
Rosy Red Washita.....60¢
Washita Stone, Extra.....50¢
Washita Stone, No. 1.....40¢
Washita Stone, No. 2.....30¢
Lily White Slips.....90¢
Rosy Red Slips.....90¢
Washita Slips, Extra.....80¢
Washita Slips, No. 1.....70¢
Arkansas Stone, No. 1, 3 to 5 in. $2.50
Arkansas Stone, No. 1, 5 to 8 in. $3.50
India Oil Stones.....25%
Tanite Mills:
Emery Oil, ₩ doz. $5.00.....50@50%

Stoners—

Cherry—

Enterprise.....25@30%

Stops, Bench—

Millers Falls.....15&10%
Morrill's...₩ doz., No. 1, $10.00; No. 2, $11.00, 40&20%

Stops, Window—

Ives' Patent.....25&5%
Wilcox, Steel, per doz., $3.00.....50%

Stove Boards—

See *Boards, Stove.*

Stove Polish—See *Polish, Stove.*

Strainers Pump—

Diamond Joe Pump Strainers..per doz. 75¢

Straps, Box—

Cary's Universal, case lots.....20&10%

Stretchers, Carpet—

Cast Iron, Steel Points....*doz. 55@55c*
Socket.....*doz. $1.75*

Strops, Razor—

Smith & Hemenway Co.....70%

Stuffers, Sausage—

Miles' Challenge, ₩ doz. $30...50&50&5%
Enterprise Mfg. Co.....25@25&7½%
National Specialty Mfg. Co., list Jan. 1, '97.....30%

Tacks Brads, &c.—

List Jan. 15, '99.
Carpet Tacks, American...90&10@0..%
American Cut Tacks.....90&30@0..%
Swedes Iron Tacks.....90&10@0..%
Swedes Upholsterers' Tacks.....
90&10@0..%
Gimp Tacks.....90&10@0..%
Lace Tacks.....90&10@0..%
Trimmers' Tacks.....90&30@0..%
Looking Glass Tacks.....70&10@0..%
Bill Posters' and Railroad Tack....
90&10@0..%
Hungarian Nails.....80&25@0..%
Common and Patent Brads.70&10@0..%
Trunk and Clout Nails....80&10@0..%

NOTE.—*The above prices are for Straight Weights.* An extra 5% is given Star Weights** and an extra 10&5% on Standard Weights.****

Miscellaneous—

Double Point Tacks.....90@6 *or 7 tens*
Steel Wire Brads, R. & E. Mfg. Co.'s list.....60&10@60%
See also *Nails, Wire.*

Tanks, Oil—

Emerald, S. S. & Co.....30-gal. $3.20
Emerald, S. S. & Co.....60-gal., $4.00
Queen City S. S. & Co., 30-gal.....$3.50
Queen City S. S. & Co., 60-gal.....$4.25

Tapes, Measuring—

American Asses' Skin.....40&10@50%
Patent Leather.....25@50&5%
Steel.....40@40&5%
Chesterman's.....25@25&5%
Eddy's Steel.....40@40&5%
Eddy's Metallic.....33⅓@33⅓&5%
Keuffel & Esser Co., Steel and Metallic, Lower list, 1899.....35%
Lufkin's Steel.....33⅓@35%
Lufkin's Metallic.....30@30&5%

Thermometers—

Tin Case.....30@30&10%

Ties, Bale—Steel.

Standard Wire.....50&10&5%

Ties, Wall—

Cleveland Wire Spring Co.:
Galv. Steel 5-32 x 6¼ in. ₩ 1000..$10.00
Galv. Steel 5-32 x 8½ in. ₩ 1000..$11.00
Galv. Steel 5-32 x 11½ in. ₩ 1000..$12.00
Galv. Steel 5 32 x 15½ in. ₩ 1000..$14.00

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Plated, sold very generally at net prices.

Tire Benders, Upsetters, &c.—See *Benders and Upsetters, Tire.*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

L. & L. J. White.....20@20&5%

Saw—

Atkins' new list.....40%
Simonds' Improved.....33⅓%
Simonds' Crescent.....25%

Ship—

L. & L. J. White.....25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Game—

Oneida Pattern.....75&5@75&10&5%
Newhouse.....45@50%
Hawley & Norton.....65&5&70%
Victor (Oneida Pattern).....75@75&10%
Star (Blake Pattern).....65&10@70&5%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes.....
8½@9c
Mouse, Round or Square Wire.....
doz. $0.85@1.00

American Pattern French Rat and Mouse Traps—

No. 1, Detroit Marty Pattern, ₩ doz. $4.50; in ⅙ gro. lots, ₩ doz.....$4.00
No. 2, Detroit Marty Pattern, ₩ doz. $3.25; in ⅙ gro. lots, ₩ doz.....$3.00
Detroit Marty Pattern Mouse, ₩ doz. $2.00; in ⅙ gro. lots, ₩ doz.....$1.75
Diamond Joe Mouse Traps....per doz. 60¢
Diamond Joe Rat Traps.....per doz. $1.00
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, Each $1.12½; ₩ doz. $12.00
No. 3, Rat, ₩ doz. $6.00; case of 50 $5.25 doz.
No. 3½, Rat, ₩ doz. $4.75; case of 72 $4.25 doz.
No. 4, Mouse, ₩ doz. $3.50; case of 72 $3.75 doz.
No. 5, Mouse, ₩ doz. $2.75;..case of 72 $2.25
Schuyler's Rat Killer, No. 1, ₩ gr. $30.00; No. 2, ₩ gr. $30.00; Mouse, No. 3, $18.00.....50%

Fly—

Balloon, Globe or Acme.....
doz. $1.15@1.35; gro. $11.00@12.00
Harper, Champion or Paragon.....
doz. $1.25@1.40: gro. $13.50@15 00

Trimmers, Spoke—

Bonney's Nos. 1 and 2.....40%

Trowels—

Disston Brick and Pointing.....30%
Disston Plastering.....25%
Disston "Standard Brand" and Garden Trowels.....40%
Never-Break Steel Garden Trowels....gro. $7.00
Peace's Plastering.....30%
Rose Brick and Plastering.....25&5%
Woodrough & McParlin, Pl'st'ring.25&10%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list.....40%
Daisy Stove Trucks, Improved pattern ₩ doz. $21.00
Model Stove Trucks.....₩ doz. $18.50

Tubs, Wash—

	No. 1	2	3
Galvanized, per doz.	*$5.00*	*5 50*	*6.00*

Galvanized Wash Tubs (S. S. & Co.):

No.	1	2	3	10	20	30
Per doz.	$5 25	6.00	6.75	6.50	7.25	8.00

Twine—

Binder—

Small lots f. o. b. New York, Philadelphia or Boston.
White Sisal, 500 ft. to lb. per lb. 7¼ @7½c
Standard, 500 ft. to lb....per lb. 7¼ @7½c
Manila, 600 ft. to lb.....per lb. 9@ 9½c
Pure Manila, 650 ft. to lb. per lb. 10½c
For carloads deduct ¼c per lb.

Miscellaneous—

	BC	B.
Flax Twine—		
No. 9, ¼ and ½-lb. Balls	22c	26c
No. 12, ¼ and ½-lb. Balls	18c	21c
No. 18, ¼ and ½-lb. Balls	16c	19c
No. 24, ¼ and ½-lb. Balls	15½c	18½c
No. 36, ¼ and ½-lb. Balls	15c	18c

Chalk Line, Cotton, ½-lb. Balls.....
22@22½c
Cotton Mops, 6, 9, 12 and 15 lb. to doz.....7@8c
Cotton Wrapping, 5 Balls to lb.....
10½c@..
American 2-Ply Hemp, ¼ and ½-lb. Balls.....12@13c
American 3 Ply Hemp, 1-lb. Balls..
12@13c
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine).....9c
India 3-Ply Hemp, 1-lb. Balls.....9c
India 2-Ply Hemp, 1½-lb. Balls.... 8c
2, 3, 4 and 5-Ply Jute, ½-lb. Balls...
10@10½c
Mason Line, Linen, ½-lb. Balls...15c
No. 264 Mattress, ¼ and ½-lb. Balls.37c
Wool.....7c

Vises—

Solid Box.....80%
Bonney's Saw Vises.....40&10%

Parallel—

Athol Machine Co.:
Simpson's Adjustable.....40%
Standard.....40%
Amateur.....25%
Bonney's.....40&10%
Fisher & Norris Double Screw....15&10%
Hollands':
Machinists'.....40%
Keystone.....70%
Lewis Tool Co.....20@30%
Massey's Perfect.....15@20%
Massey's:
Clincher.....30@40%
Combination, Quick Adj.....40%
Woodworker's.....15@20%
Merrill's.....20%
Miller's Falls.....low list 10%
Parker's:
Victor.....20@25%
Regulars.....20@25%
Vulcan's.....40@45%
Combination Pipe.....55@60%
Prentiss.....20@25%
Sargent's.....40%
Simpson's Adjustable.....40%
Snedliker's X. L.....30@25%
Stephens'.....20@25%
Van, W. & W. Hdw. Co.....40%

Saw Filers—

Bonney's, No. 1, $13; No. 3, $16 .50&10%
Disston's D 3 Clamp and Guide, ₩ doz. $30.....25%
Reading.....40&10%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3.....30&10%

Miscellaneous—

Bignall & Keeler Combination Pipe Vise.....60%
Parker's Combination Pipe:
87 Series.....60%
187 Series.....60&5%
No. 670.....40%

Wads—Price Per M.

B. E., 11 up	60c
B. E., 9 and 10	70c
B. E., 8	80c
B. E., 7	80c
P. E., 11 up	$1.00
P. E., 9 and 10	1.25
P. E., 8	1.50
P. E., 7	1.50
Ely's B. E., 11 and larger	$1.70@1.75
Ely's P. E., 12 to 20	$3.00@3.25

Dis. 20&2½%

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Aluminum—

S. S. & Co. Reduced List.....40%

Cast Iron, Hollow—

Stove Hollow Ware:
Ground.....65%
Unground.....70%
White Enameled Ware:
Maslin Kettles.....80%
Boilers and Saucep ns.....50&10%
Tinned Boilers and Saucepans.....
60&10%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware, list July '99..35%
Granite Ware, list Jan. 1, '94, revised Jan. 2, '95.....40&10%
Second Quality, Agate Nickel Steel..65%
Second Quality, Granite.....
70&10&70&10&10%
Iron Clad:
Peppered Ware, high list.....70%
Mottled Ware, high list.....75%
Never Break Enameled....50&5@50&10%

Tea Kettles—

Galvanized Tea Kettles:

Inch	*6*	*7*	*8*	*9*
Each	*45c*	*50c*	*55c*	*65c*

Steel Hollow Ware.

Avery Spiders & Griddles.....65@65&5%
Avery Kettles.....60%
Porcelained.....50&5@50&10%
Never Break Spiders and Griddles.....
65@65&5%
Never Break Kettles.....60@60&10%
Solid Steel Spiders & Griddles.....65&5%
Solid Steel Kettles.....60%
Solid Steel Ware, Enameled.....50&5%

Washboards—

Solid Zinc: ₩ doz
Crescent, family size, bent frame..$3.00
Red Star, laundry size, stationary protector.....$4.25
Double Zinc Surface:
Saginaw Globe, family size, stationary protector.....$2.65
Wilson, family size, bent frame...$2.75
Single Zinc Surface:
Naiad protector, family size, open back peforated.....$2.40
Saginaw Globe, protector, family size, ventilated back.....$2.25
Wilson, bent frame family size, ventilated back.....$2.25

Washers—

Leather, Axle—

Solid..... 80&10&10&85%
Patent..... 85&10@85&20%
Oil: ⅜ 1 1¼ 1¼ Inch.
11c 13c 13c 15c per 100

Iron or Steel—

Size bolt.... 5-16 ⅜ ½ ⅝ ¾
Washers....$5.60 4.70 3.40 3.20 3.00
In lots less than one keg add ¼c per lb., 5-lb. boxes add ½c to list.

Cast Washers—

Over ¼ inch, barrel lots, per lb..... 1¼@1¾c

Washer Cutters—

See *Cutters, Washer.*

Washing Machines—

See *Machines, Washing.*

Water Coolers—

See *Coolers, Water.*

Wedges—

Oil Finish.....lb. 3¼c

Weights, Sash—

Per ton.....$10.00@$12.50
Western Foundries make price $1@$2 lower.

Well Buckets, Galvanized

See *Pails, Galvanized.*

Wheels Well—

8-in., $1.65@1.75; 10-in., $2.00@2.10; 12-in., $2.50@2.75; 14-in., $4.25@4.40

Wire and Wire Goods—

Brt. and Ann., 6 to 9.....70&10%
Brt. and Ann., 10 to 13.....72½&5%
Brt. and Ann., 19 to 26.....75&7½%
Brt. and Ann., 27 to 36....75&10&2½%
Cop'd and Galv., 6 to 9.....66⅔&5%
Cop'd and Galv., 10 to 13.....70%
Cop'd and Galv., 19 to 26.....70&10%
Cop'd and Galv., 27 to 36.....72½&5%
Tinned, 6 to 14.....70&10&5%
Tinned, 15 to 18.....70&5&5%
Tinned, 19 to 26.....70%
Tinned, 27 to 36.....65&10%
Annealed Wire on Spools..70&5@70&10%
Brass and Copper Wire on Spools..60&5@50&10%
Brass, list Feb. 26, '98.....25%
Copper, list Feb. 26, '98.....15%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to $.40%
Wire Clothes Line, see *Lines.*
Wire Picture Cord, see *Cord.*

Bright Wire Goods—

Iron and Brass, list July 1, 1899.... 85&10@..%

Wire Cloth and Netting—

Galvanized Wire Netting, 30&20@35%
Painted Screen Cloth per 100 ft., $1.00
Light Hardware Grade:
4-8 Mesh, Plain (3c. list) sq. ft.. 1¾c
4-8 Mesh, Galv. (3c. list) sq ft... 2¼c

Wire Barb—See *Trade Report.*

Wire, Rope—See *Rope, Wire.*

Wrenches—

Agricultural.....70&10@75&5%
Case lots.....75&10%
Acme.....60&10%
Baxter's S.....60&10%
Bull Dog.....70%
Coes' Genuine.....40&10&5&5%
Coes' "Mechanics".....40&10&10&5&5%
Alligator.....60&10&10%
Bemis & Call's:
Adjustable S.....35&5%
Adjustable S Pipe.....40%
Brigg's Pattern.....80&10%
Combination Black.....40&5%
Combination Bright.....40%
Cylinder or Gas Pipe.....55%
Extra Heavy.....45%
Merrick's Pattern.....50%
No. 3 Pipe, Bright.....55%
Bindley Automatic.....30%
Boardman's.....33⅓%
Donohue's Engineer.....40&10%
Eagle.....50&10%
Gem Pocket.....30%
Hercules.....70%
Knife Handle, Machinists' (W. & B.):
Case lots.....50&10%
Less than case lots.....50&5%
Improved Pipe (W. & B.).....*%
Solid Handles, P. S. & W.....50&10%
Stevenson.....60&10&10%

Wrought Goods—

Staples, Hooks, &c., list March 17 '98.....85&10@85&25%

Yokes, Neck—

Covert Saddlery Works, Trimmed.60&3%
Covert Saddlery Works, Neck Yoke Centers.....70%

Yokes, Ox, and Ox Bows—

Fort Madison's Farmers & Freighters'.. list not

Zinc—

Sheet.....lb 6½c@7c

PAINTS, OILS AND COLORS.—Wholesale Prices.

White Lead, Zinc, &c.

Lead, Foreign white, in Oil.. ₰ lb 7¼@ 9¼
Lead, American White, in Oil:
Lots of 500 lb or over.....@ 6¼
Lots less than 500 lb.....@ 7
Lead, White, in oil, 25 lb tin pails, add to keg price.....@ ¼
Lead, White, in oil, 12½ lb tin pails, add to keg price.....@ 1
Lead, White, in oil, 1 to 5 lb assorted tins, add to keg price..@ 1¼
Lead White, Dry in bbls.....5¾@ 6
Lead, American, Terms: On lots of 500 lbs. and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.
Zinc, American, dry.....₰ lb 4½@ 4¾
Zinc, Paris, Red Seal, dry.....@ 8½
Zinc, Paris, Green Seal, dry.....@ 9¼
Zinc, Antwerp Red Seal, dry.....@ 6½
Zinc, Antwerp, Green Seal, dry..@ 7¼
Zinc, V. M. French, in Poppy Oil, Green Seal:
Lots of 1 ton and over.....12 @12¼
Lots of less than 1 ton.....12¼@12½
Zinc, V. M. French, in Poppy Oil, Red Seal:
Lots of 1 ton and over.....10¾@11¼
Lots of less than 1 ton.....11@11½
Discounts.—V. M. French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls., 4%.

Dry Colors.

Black, Carbon.....₰ lb 8 @20
Black, Drop, Amer.....2½@ 4
Black, Drop, Eng.....7 @11
Black, Ivory.....15 @21
Lamp, Com.....3 @ 5
Blue, Celestial.....₰ lb 4 @ 6
Blue, Chinese.....30 @35
Blue, Prussian.....28 @34
Blue, Ultramarine.....30 @35
Brown, Spanish.....1½@ 1
Brown, Vandyke, Amer.....1¾@ 2¼
Brown, Vandyke, Foreign.....2¼@ 3½
Carmine, No. 40.....₰ lb $2.05@2.75
Green, Chrome, ordinary.....5 @ 6
Green, Chrome, pure.....16 @20
Lead, Red, bbls. ½ bbls. and kegs:
Lots 500 lb or over.....@ 6
Lots less than 500 lb.....@ 6½
Litharge, bbls. ½ bbls. and kegs:
Lots 500 lb or over.....@ 6
Lots less than 500 lb.....@ 6½
Ocher, French Washed.....1½@ 2½
Ocher, Dutch Washed.....4½@ 5
Ocher, American....₰ ton $10.00@15.00
Orange Mineral, English..₰ lb 8½@11½
Orange Mineral, French.....11½@11½
Orange Mineral, German.....8½@ 9½
Orange Mineral, American.....7½@ 8
Red, Indian, English.....4½@ 8½
Red, Indian, American.....3 @ 3½
Red, Turkey, English.....4 @ 6
Red, Tuscan, English.....7 @10
Red, Venetian, Amer., ₰ 100 lb. 80@1.10
Red Venetian, English.₰ lb ..1.80@2.10
Sienna, Italian, Burnt and Powdered.....₰ lb 3½@ 9½
Sienna, Ital., Raw, Powd.....3½@ 7½
Sienna, American, Raw.....1½@ 2
Sienna, American, Burnt and Powdered.....₰ lb 1½@ 2
Talc, French.....₰ 100 lb $1.25 @1.50
Talc, American.....90 @1.10
Terra Alba, French, ₰ 100 lb.....95 @1.00
Terra Alba, English.....95 @1.00
Terra Alba, American No. 1....65 @85
Terra Alba, American No. 2....45 @60
Umber, Turkey, Bnt. & Pow.₰ lb 2½@ 3½
Umber, Turkey, Raw & Powd. 2½@ 3½
Umber, Bnt. Amer.....1½@ 2
Umber, Raw, Amer.....1½@ 2
Yellow, Chrome.....10½@25
Vermilion, American Lead.....10 @25
Vermilion, Quicksilver, bulk.....@70
Vermilion, Quicksilver, bags.....@71
Vermilion, English, Import..80 @95
Vermilion, Chinese.....$1.00@1.20

Colors in Oil.

Black, Lampblack.....12 @14
Blue, Chinese.....36 @40
Blue, Prussian.....32 @33
Blue, Ultramarine.....13 @16
Brown, Vandyke.....9¼@13
Green, Chrome.....10 @12
Green, Paris.....@24
Sienna, Raw.....10 @13
Sienna, Burnt.....10 @13
Umber, Raw.....9½@12
Umber, Burnt.....9½@12

Miscellaneous.

Barytes, Foreign, ₰ ton....$19.00@21.00
Barytes, Amer. floated.....19.00@20.00
Barytes, Crude.....9.00@10.00
Chalk, in bulk.....₰ ton 2.00@ 2.75
Chalk, in bbls.....@ 35
China Clay, English..₰ ton 12.00@17.50
Cobalt, Oxide.....₰ 100 lb 2.20@ 2.50
Whiting, Common.₰ 100 lb .42@ .52
Whiting, Gilders.....54@ .64
Whiting, extra Gilders'.....58@ .68

Putty.

In bulk.....$1.90
In bladders.....2.40
In cans, 12 lb to 25 lb.....3.50
In cans, 1 lb to 5 lb.....3.60

Spirits Turpentine.

In Southern bbls.....@40¢
In machine bbls.....@40¼¢

Glue.

Low Grade.....₰ lb 12 @15½
Cabinet.....13½@16½
Medium White.....14½@16½
Extra White.....18 @23
French.....12 @40
Irish.....13½@16

Animal, Fish and Vegetable Oils.

Linseed, City, raw.....₰ gal. 65@68
Linseed, City, boiled.....65 @70
Linseed, State and West'n, raw 63 @65
Linseed, raw Calcutta seed.....@85
Lard, Prime.....65 @66
Lard, Extra No. 1.....50 @52
Lard, No. 1.....41 @43
Cotton-seed, Crude.....27 @27½
Cotton-seed, Summer Yellow, prime.....29½@30
Cotton-seed Summer Yellow, off grades.....29 @30½
Sperm, Crude.....@..
Sperm, Natural Spring.....@..
Sperm, Bleached Spring.....@..
Sperm, Natural Winter.....58 @59
Sperm, Bleached Winter.....63 @64
Whale, Crude.....@47
Whale, Natural Winter.....@47
Whale, Bleached Winter.....@48
Menhaden, Crude, Sound.....28 @29
Menhaden, Light Strained.....32 @33
Menhaden, Bleached Winter..35 @..
Menhaden, Ex Bleached Winter 38 @39
Tallow, prime.....52 @53
Cocoanut, Ceylon.....5.60@5.65
Cocoanut, Cochin.....6½@ 6¾
Cod, Domestic.....34 @35
Cod, Newfoundland.....36 @38
Red Elaine.....35 @..
Red Saponified.....₰ lb 5 @ 5½
Olive, Italian, bbls.....57½@65
Neatsfoot, prime.....52 @54
Palm, prime, Lagos.....₰ lb 5½@6

Mineral Oils.

Black, 30 gravity, 25@30 cold test.....₰ gal. 9½@10½
Black, 29 gravity, 15 cold test. 10¾@11½
Black, summer.....9½@ 9¾
Cylinder, light filtered.....14¾@17¾
Cylinder, dark filtered.....11¾@16½
Paraffine, 903-907 gravity.....12½@12¾
Paraffine, 903 gravity.....11¾@12¾
Paraffine, 883 gravity.....9½@10
Paraffine, red, No. 1.....12½@12¾
In small lots ¼¢ advance.

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CURRENT METAL PRICES.

MARCH 13, 1901.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron: Duty, Round, 0.6¢ ₩ lb; Square, 0.8¢ ₩ lb
1 to 1½ in. round and square ..... } ₩ lb 1.70@1.80¢
1¼ to 4 in. x ⅜ to 1 in..... }
Refined Iron:
1 to 1¾ in. round and square..... } ₩ lb 1.75@1.85¢
1¼ to 4 in. x ⅜ to 1 in..... }
1¼ to 4 in. x ¼ to 5-16..... ₩ lb 1.90@2.00¢
Rods—⅜ and 11-16 round and square. ₩ lb 2.10@2.20¢
Angles: Cts ₩ lb
3 in. x ¼ in. and larger..... 2.00¢
3 to 3½ in. x 3-16 in..... 2.00¢
1¼ to 3 in. x ¼ in..... 2.10¢
1¼ to 2¾ in. x 3-16 in and thicker..... 2.00¢
1 to 1¼ in. x 3-16 in..... 2.10¢
1 to 1¼ in. x ⅛ in..... 2.20¢
⅝ x ¼ in..... 2.50¢
½ x ¼ in..... 2.55¢
⅝ x ⅛ in..... 3.20¢
½ x 3-32 in..... 3.70¢
Tees:
1 in..... 2.40¢
1¼ in..... 2.30¢
1½ in. and larger..... 2.20¢
Beams..... 2.15¢
Channels, 3 in. and larger..... 2.15¢
Bands—1¼ to 6 x 3-16 to No. 8..... ₩ lb 2.15¢
"Burden's Best" Iron, base price..... ₩ lb 3.15¢
Burden's "H. B & S. Iron, base price..... ₩ lb 2.95¢
"Ulster"..... ₩ lb 3.60¢
Norway Bars..... 4 @4½¢
Norway Shapes..... 4½@4¾¢

Merchant Steel from Store—

per lb
Bessemer Machinery..... 1.75 to 1.85¢
Toe Calk, Tire and Sleigh Shoe..... 2.00@2.50¢
Best Cast Steel, base price in small lots..... 7½¢
Best Cast Steel Machinery, base price in small lots..... 6 ¢

Soft Steel Sheets—

¼ inch.....	2¢	No. 14.....	2.50¢
3-16 inch.....	2.05¢	No. 16.....	2.60¢
No. 8.....	2.20¢	No. 18.....	2.90¢
No. 10.....	2.30¢	No. 20.....	3.30¢
No. 12.....	2.40¢	No. 22.....	3.40¢

Sheet Iron from Store.

Black.

	One Pass, C. R. Soft Steel.	R. G. Cleaned.
Nos. 14 to 16.....	₩ lb, 3.15.....	3.20¢
Nos. 18 to 21.....	₩ lb, 3.25.....	3.30¢
Nos. 22 to 24.....	₩ lb, 3.35.....	3.40¢
Nos. 25 and 26.....	₩ lb, 3.45.....	3.50¢
No. 27.....	₩ lb, 3.55.....	3.60¢
No. 28.....	₩ lb, 3.65.....	3.70¢

Russia, Planished, &c.

Genuine Russia, according to assortment..... ₩ lb 10½¢
Patent Planished..... ₩ lb A, 9¾¢; B, 8¾¢, net.

Galvanized.

	B. B.
Nos. 10 to 16.....	₩ lb, 12¢
Nos. 17 to 21.....	₩ lb, 13¢
Nos. 22 to 24.....	₩ lb, 14¢
Nos. 25 to 26.....	₩ lb, 15¢
No. 27.....	₩ lb, 16¢
No. 28.....	₩ lb, 17¢
No. 29.....	₩ lb, 19¢
No. 30.....	₩ lb, 21¢

67½&2½&70% off

36 in. 1¢ ₩ lb higher.

Foreign Steel from Store—

Best Cast.....	₩ lb 15 ¢
Extra Cast.....	₩ lb 18 @ 20 ¢
Swaged, Cast.....	₩ lb 16 ¢
Best Double Shear.....	₩ lb 15 ¢
Blister, 1st quality.....	₩ lb 13 ¢
German Steel, Best.....	₩ lb 10 ¢
2d quality.....	₩ lb 9 ¢
3d quality.....	₩ lb 8 ¢
Sheet Cast Steel, 1st quality.....	₩ lb 15 ¢
2d quality.....	₩ lb 14 ¢
3d quality.....	₩ lb 12 ¢
R. Mushet's "Special".....	₩ lb 46 ¢
" " Annealed.....	₩ lb 75 ¢
" " "Titanic".....	₩ lb 10 ¢
Hobson's Choice XX Extra Best.....	₩ lb 35 ¢
Jessop Self Hardening.....	₩ lb 45 ¢
Seamans' "Nelson" Steel.....	40 ¢
Hobson's "Soho" Special Self-Hardening.....	₩ lb 43 ¢

METALS—

Tin—

Duty.—Pigs, Bars and Block. Free.	Per lb
Banca, Pigs.....	27¼@27½¢
Straits, Pigs.....	27@27¼¢
Straits in Bars.....	28@28¼¢

Tin Plates—

American Charcoal Plates.

Calland Grade:
IC, 14 x 20..... $6.75
IX, 14 x 20..... 8.25
Melyn Grade:
IC, 14 x 20..... 6.25
IX, 14 x 20..... 7.75
Allaway Grade:
IC, 14 x 20..... 5.50
IX, 14 x 20..... 6.50

American Coke Plates—Bessemer—

IC, 14 x 20 .....108 lb..... $4.85@4.90
IX, 14 x 20..... $5.95@6.00
IXX 14 x 20..... $7.20@7.25

American Terne Plates—

IC, 20 x 28..... $9.50
IX, 20 x 28..... 11.25

Tin Boiler Plates, American—

IXX, 14 x 26.....112 sheets..... $12.50
IXX, 14 x 28.....112 sheets..... 13.50
IXX, 14 x 31.....112 sheets..... 15.00

Copper—

Duty: Pig, Bar and Ingot and Old Copper free Manufactured, 2½¢ ₩ lb.

Ingot—

Lake..... 17¼@17¾¢
Ansonia grade Casting..... 16¾@17¼¢

Sheet and Bolt—

January 19, 1900. Net.
Prices, in cents per pound.
Sheet 20 x 60.

Not wider than	Not longer than	And longer than	64 oz. & over, 50 lb. sheet, 30 x 60 and heavier.	32 oz. to 64 oz., 25 to 50 lb.	24 oz. to 32 oz., 18¾ to 25 lb.	16 oz. to 24 oz., 12½ to 18¾ lb.	14 oz. and 15 oz., 11 to 12½ lb.	12 oz. and 13 oz., 9⅜ to 11 lb.	10 oz. and 11 oz., 7¾ to 9⅛ lb.	8 oz. and 9 oz., 6¼ to 7¾ lb.	Lighter than 8 oz.
Ins.	Ins.	Ins.									
30	72		30	30	30	30	21½	23½	23½	26⅛	29⅝
30	96	72	30	30	30	30	21	23½	26½	30½	
30		96	30	30	30	30	22	26½			
36	72		30	30	30	30	22	24½	27½	30⅛	
36	96	72	30	30	30	30	22	26¾	29½		
36	120	96	30	30	30	30	23⅛				
36		120	30	30	30	30	23				
48	72		30	30	30	24	24⅝	27½	30⅛		
48	96	72	30	30	30	24	25	26⅝			
48	120	96	30	30	30	24	26⅛				
48		120	30	30	30	24	26				
60	72		30	30	30	24	25½	31⅛			
60	96	72	30	30	30	24	26⅛				
60	120	96	30	30	30	24	26				
60		120	30	30	30	24	26				
72	96		30	30	30	24	28				
72	144	96	30	30	30	24	30½				
72		144	30	30	30	24					
108	120		30	30	30	24					
108		120	30	30	30	24					
108 wider than 108	144		30	30	30	24					
		144	30	30	30	24					

Bolt Copper, ¾ inch diameter and over, ₩ lb 20½¢.
Circles, Segments and Pattern Sheets, 3¢ ₩ lb advance over price of Sheet Copper required to cut them from. Cold or Hard Rolled Copper, 14 oz. ₩ square foot and heavier, 1¢ ₩ lb over the foregoing prices.
Cold or Hard Rolled Copper, lighter than 14 oz. ₩ square foot, 2¢ ₩ lb over the foregoing prices.
All Polished Copper, 20 in. wide and under, 1¢ ₩ lb advance over the price for Cold Rolled Copper.
All Polished Copper, over 20 in. wide, 2¢ ₩ lb advance over the price for Cold Rolled Copper.

Planished Copper—

1¢ ₩ lb more than Polished Copper.

Copper Bottoms, Pits and Flats—

14 oz. to square foot and heavier, ₩ lb..... 34½¢
12 oz. and up to 14 oz. to square foot, ₩ lb..... 35½¢
10 oz. and up to 12 oz., ₩ lb..... 37½¢
Lighter than 10 oz., ₩ lb..... 30½¢
Circles less than 8 in. diameter, 2¢ ₩ lb additional.
Circles over 13 in. diameter are not classed as Copper Bottoms.

Copper Wire—

Hard and Soft Drawn—B. & S. Gauge.
List March 2, 1900.

Nos.	0000 to 8	9 and 10		11 and 12
	Base	½¢		⅝¢ ₩ lb adv.
Nos.	13	14	15	16
	¾¢	⅞¢	1¢	1⅛¢ ₩ lb adv.
Nos.	17	18	19	20
	1⅛¢	2¢	2½¢	2⅞¢ ₩ lb adv.

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.
Feb. 6, 1899. Net. Outside Diameter.

Stubs' W. G.	B. & S. W. G.	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1	1¼	1½
4-11	3- 9	...	.....	...	.....	33	31	30	29	28	27	25	24
12	10	...	.....	37	35	33	31	30	29	28	27	25	24
13	11	...	.....	37	35	33	31	30	29	28	27	25	24
14	12	...	41	37	35	33	31	30	29	28	27	25	24
15	13	...	42	38	36	33	32	31	30	30	28	26	25
16	14	...	43	39	37	34	33	32	31	30	29	26	25
17	15	...	44	40	38	35	34	33	32	31	30	27	26
18	16	62	46	42	39	36	35	34	32	31	30	28	27
19	17	62	47	41	40	37	36	35	34	33	32	30	29
20	18-19	64	49	44	41	39	38	37	36	35	34	32	31
21	20	66	51	46	43	41	40	39	38	37	36	35	34
22	21	71	55	49	44	42	41	40	39	38	37	37	36
23	22	76	61	50	45	44	43	42	41	40	39	39	39
24	23	81	66	53	48	46	45	44	43	41	40	40	41
25	24	86	72	56	52	49	47	46	45	43	43	44	45

Copper Bronze and Gilding Tube, 3¢ ₩ lb additional

Iron Pipe Sizes—Brass

⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6 inch
36	32	29	27	21	21	21	21	21	21	21	23	23	25	27	28¾₩ lb

Copper, Bronze or Gilding Tubes, 3¢ ₩ lb additional

Brazed Brass Tubing.

(*To No. 19, inclusive.*) Feb. 26 1900
Brown & Sharpe's gauge standard.

					Per lb.
Plain Round Tube, ¼ in. up to 2 in.....					$0.35
"	"	⅜	"	¾ "	.38
"	"	½	"	⅞ "	.38
"	"	⅝	"	⅞ "	.41
"	"	¾	"	⅞ "	.48
"	"	5-16	"	¾ "	.55
"	"	¼	"	5-16 "	.65
"	"	3-16	"	¼ "	1.00
"	"	⅛	"	3-16 "	1.50
Smaller than ⅛ inch.....					Special
3 inch and larger.....					.40
Over 2 inch to 3¼ inch, inclusive.....					.45
Over 3¼ inch.....					.50

Bronze and Copper, advance on Brass List, 3 cents.
Discount from list %..... 35%

Roll and Sheet Brass—

(*Brown & Sharpe Standard Gauge.*)

Common High Brass Wider than and including	in. 2 12	in. 13 14	in. 14 16	in. 16 18	in. 18 20	in. 20 22	in. 22 24	in. 24 26
To No. 20 inclusive.	.22	.23	.25	.27	.29	.31	.33	.36
Nos. 21 22, 23 and 24.	.22	.24	.26	.28	.30	.32	.34	.37
Nos. 25 and 26.....	.23	.24½	.27	.29	.31	.33	.35	.38
Nos. 27 and 28.....	.25	.25	.28	.30	.32	.34	.36	.39
Common High Brass Wider than and including	in. 2 12	in. 13 14	in. 14 16	in. 16 18	in. 18 20	in. 20 22	in. 22 24	in. 24 26
To No. 20 inclusive.	.22	.23	.25	.27	.29	.31	.33	.36
Nos. 21 22, 23 and 24.	.22	.24	.26	.28	.30	.32	.34	.37
Nos. 25 and 26.....	.23	.24½	.27	.29	.31	.33	.35	.38
Nos. 27 and 28.....	.25	.25	.28	.30	.32	.34	.36	.39

Common High Brass Wider than and including	in. 26 28	in. 28 30	in. 30 32	in. 32 34	in. 34 36	in. 36 38	in. 38 40	in. 40
To No. 20, inclusive..	.39	.42	.46	.50	.55	.60	.65	*
Nos. 21, 22, 23 and 24.	.40	.43	.47	.51	.56	.61	.68	
Nos. 25 and 26.....	.41	.44	.48	.52	.57	.63	.71	
Nos. 27 and 28.....	.42	.45	.49	.53	.58	.65	.75	

* Special prices not less than 80 cents.
Add ½¢ ₩ lb additional for each number thinner than Nos. 28 to 38 inclusive. Discount from List..... 20%

Wire in Coils. List February 26, 1896.

Brown & Sharpe's gauge the standard.	Com. high brass.	Low brass.	Gild'g bronze and copper
All Nos. to No. 10, inclusive....	$0.23	$0.27	$0.28
Above No. 10 to No. 16.....	.23½	.27½	.28½
No. 17 and No. 18.....	.24	.28	.32
No. 19 and No. 20.....	.25	.29	.33
No. 21.....	.26	.30	.34
No. 22.....	.27	.31	.35
No. 23.....	.28	.32	.36
No. 24.....	.30	.34	.38
No. 25.....	.32	.36	.40
No. 26.....	.35	.39	.43
No. 27.....	.38	.42	.46
No. 28.....	.42	.46	.51
No. 29.....	.45	.49	.54
No. 30.....	.48	.52	.62
No. 31.....	.51	.55	.67
No. 32.....	.55	.59	.73
No. 33.....	.59	.63	.82
No. 34.....	.64	.68	.95
No. 35.....	.70	.74	1.30
No. 36.....	.76	.80	1.50
No. 37.....	1.00	1.04	1.70
No. 38.....	1.30	1.34	2.00
No. 39.....	2.00	2.00	3.25
No. 40.....	2.60	2.60	5.75

Discount, Brass Wire, 20%; Copper Wire, Net.
List November 16, 98.
Spring Wire, 2¢ ₩ lb advance.

Tobin Bronze—

Straight, but not turned, Rods, ⅝ to 3 in. diameter, ₩ lb, net..... 20¢
Finished Piston Rods, ⅝ to 2½ in. diameter, ₩ lb net. 21¢
Other sizes and extreme lengths, special prices.

Spelter—

Duty: In Blocks or Pigs, 1¢ ₩ lb
Western Spelter..... 4.45@4½¢

Zinc.

Duty: Sheet, 2¢ ₩ lb.

600 lb casks.....	6¾¢	Per lb.....	7¼¢

Lead.

Duty: Pigs and Bars and Old, 2½¢ ₩ lb. Pipe and Sheets, 2¾¢ ₩ lb.

American Pig.....	4.60@4.62½¢
Bar.....	5¼@5½¢
Pipe.....	5¢
Tin Lined Pipe.....	12½¢.....20% off
Block Tin Pipe.....	40 ¢.....20% off
Sheet Lead, full rolls.....	7¢.....20% off
Sheet Lead, cut.....	7½¢.....20% off

Old Lead in exchange, 4½¢ ₩ lb.

Solder.

½ & ¼ guaranteed..... 18 @18½¢
No. 1..... 14½@16½¢

Prices of Solder indicated by private brand vary according to composition.

Antimony—

Duty, ¾¢ ₩ lb.

Cookson.....	₩ lb 11¢
Hallett's.....	₩ lb 9¾@10¢
U. S.....	₩ lb 9¾¢

Aluminum—

Duty: Crude, 8¢ ₩ lb. Plates, Sheets, Bars and Rods, 13¢ ₩ lb.

No. 1 Aluminum (guaranteed over 99% pure), in ingots for remelting:
Small lots..... ₩ lb 37¢
100-lb lots..... ₩ lb 35¢
No. 2 Aluminum (guaranteed to be over 90% pure), in ingots for remelting:
Small lots..... ₩ lb 34¢
100-lb lots..... ₩ lb 33¢

Aluminum Sheet, B. & S. gauge. 50 lb or more

Wider than.....	6-in.	14-in.	24-in.
And including.....	14-in.	24-in.	30-in.
	₩ lb.	₩ lb.	₩ lb
Nos. 13 to 19.....	$0.42	$0.44	$0.47
No. 20.....	.44	.46	.49
Nos. 21 to 23.....	.46	.48	.51
No. 24.....	.46	.50	.53
No. 25.....	.47	.51	.54
No. 26.....	.47	.54	.59
No. 27.....	.48	.57	.62
No. 28.....	.48	.57	.64
No. 29.....	.49	.60	.69
No. 30.....	.50	.64	.77

Note.—Lots of less than 50 lb 5¢ ₩ lb extra.

Aluminum Wire, B. & S. Gauge.

Larger than No. 9	₩ lb 40¢	No. 15.....	₩ lb 43¢
No. 9 to No. 10..	₩ lb 40½¢	No. 17.....	₩ lb 50¢
No. 11.....	₩ lb 41 ¢	No. 18.....	₩ lb 55¢
No 12.....	₩ lb 41½¢	No. 19.....	₩ lb 60¢
No. 13.....	₩ lb 42 ¢	No. 20.....	₩ lb 65¢
No 14	₩ lb 42½¢	No. 21.....	₩ lb 85¢

Old Metals.

Dealers' Purchasing Prices Paid in New York.

Heavy Copper.....	₩ lb 14¾¢
Light and Tinned Copper.....	₩ lb 13¾¢
Heavy Brass.....	₩ lb 9⅝¢
Light Brass.....	₩ lb 7½¢
Lead.....	₩ lb 4½¢
Tea Lead.....	₩ lb 3 ¢
Zinc.....	₩ lb 3 ¢
No. 1 Pewter.....	₩ lb 17 ¢
No. 2 Pewter.....	₩ lb 9½¢
Tin Plate Scrap.....	₩ ton $6.50
Wrought Scrap Iron.....	₩ gross ton $10.00@
Heavy Cast Scrap.....	₩ gross ton $10.00@10.50
Stove Plate Scrap.....	₩ gross ton $7.00@ 7.50
Burnt Iron.....	₩ gross ton $5.00@ 5.50